James Brown's

Book

May 4th 1808

JB

James Brown.
Born July 30 1790

Simple Addition

Examples

4 4 3 7 6 4 5 8 3	3 4 5 6 7 8 9 2
2 7 6 3 5 7 8 3 9	4 1 0 3 4 5 6 0
6 3 2 4 5 8 9 6	1 2 3 4 5 6 7 6
4 5 3 8 6 [illegible] 5 8	2 1 0 0 8 4 1 1
3 4 4 5 9 9 8 8 9	5 6 1 4 5 6 8 2
2 5 5 1 0 2 2 1 4 1	1 6 5 1 0 2 2 2 1
1 7 0 7 2 5 7 5 3 8	1 3 0 5 3 4 3 2 9
2 5 5 1 0 2 2 1 4 1	1 6 5 1 0 2 2 2 1

Simple Subtraction

Examples

Dollars	
From 1009400	From 50600041
Take 9611	Take 34125698
999789	16474343
1009400 Answer	50600041 Answer

Simple Multiplication

Examples

Multiply 16894 by 16

1007364	8/2
16894	2/7
2686304	Proof

Multiply 43125899 by 183

129380697	
34501512	
43126899	6/0
7892220837	0/3
	Proof

Continued

Multiply 1469316945 6 by 3452142

1469316945 6
3452142

29384633891 2
58769267782 4
5876926778 2 4
1469316945 6
146931694 5 6
29386338912
5876926782 4
587692678 2 4
146931694 5 6

5064457964799075 2

Multiply 2646483 6 by 369964

3699604

10584 39 3 94 4
15876 89 0 6 1 4
2381835 92 4
793945 30 8
15876 90 6 1 4
793945 30 8

9321550623 9344

Proof

Simple Division

Example

Divide 859693. by 57656

57656 / 859693 (14 Answer
57656 x
283113
230624 x
52489 x

859693 Proof

Continued

A farm of 375 Acres is let for 1125 how much does it pay per Acre

375/1125(3 Answer 3 Dollars

A certain number of men were employed in the payment of 1950 Dollars and each man paid 25 Dollars what was the number of men

25/1950(78 Ans 78 Dollars

195
145
125
200
200

What number must I multiply by 13 that the product may be 91

13/91(7 Ans 7

26
65
65

An Army of 15000 men having plundered a City took 2625000 Dollars what was each mans share

15/000 25/000(175 Answer 175 Dollars

24
15
112
105
75
75

Compound Addition

Examples

Suppose A man goes a journey and on the first day

		£	s	d
1802	May 14th pays for dinner	0	1	6
	for oats for his horse	0	0	6
	for sling	0	1	2
	for supper and lodging	0	2	0
	for horse keeping	0	1	10
	for letters	0	1	6
	for breakfast	0	2	0
	to the barber for dressing	0	1	6
	for dinner again and	0	3	5
	other refreshments	0	15	5

Answer

A man purchases cattle one yoke of oxen for £14=11=6 four cows £18=19=7 and other stock to the Amount of £21 £=5 What was the Amount of the cattle purchased

£	s	d
14	11	6
18	19	7
21	05	0
£54	16	1

Answer

Troy Weight

Examples

lb	oz	pwt	gr
784	= 11	= 19	= 23
437	= 8	= 14	= 22
694	= 7	= 13	= 14
684	= 7	= 12	= 13
2602	= 0	= 1	= 0
1817	= 0	= 1	= 1
2602	= 0	= 1	= 0

Avoirdupois Weight

Examples

Cwt	Qrs	lb	oz	Dr	Cwt	Qrs	lb	oz	Dr
24	3	22	13	13	33	3	12	8	2
13	2	18	12	13	12	2	13	4	1
68	1	21	11	16	13	3	18	6	3
111	0	9	6	10	60	1	16	2	6
82	0	12	8	13	26	2	3	10	4
111	0	9	6	10	60	1	16	2	6

Time

Examples

Months	Weeks	Days
3	= 2	= 6
6	= 3	= 4
3	= 2	= 5
9	= 2	= 3
9	= 3	= 4
6	= 2	= 2
2	= 12	= 1 = 3
2	= 8	= 2 = 4
2	= 12	= 1 = 3

Cloth Measure

Examples

Yd	qr	Nails	Yd	qr	Nails
19	3	3	34	3	1
26	2	2	29	2	2
18	2	3	49	2	3
46	3	0	36	3	2
34	0	2	47	3	1
53	2	2	36	2	0
199	3	0	234	3	1
199	0	1	200	0	0
197	3	0	234	3	1

Long Measure

Examples

Yards	Miles	Rods	Yds.	Feet	Inches
19	5	8½	9	39	4½ 2 11
39	1	3½	6	29	3½ 2 9
22	14	2	21	4	0 5
92	19	6	31	3	1 3
191	39½	0	1	½	1 4
151	48½	0	1	½	1 5
191	39½	0	1	½	1 4

Land or Square Measure

Examples

Acres	Rod	Pole	Feet	Inches
396	3	36	93	121
568	1	27	58	76
249	2	35	61	24
1193	0	18	213	77
816	0	22	114	100
1193	0	18	213	77

Solid Measure

Examples

Cord	Ft	Inches
39	118	1021
3	56	439
18	92	659
29	86	124
91	92	1113
51	86	1220
91	92	1113

Dry Measure

Examples

Yrs	Qrs	Bus	Pks	Quarts
189	= 9	= 3	= 3	= 7
843	= 8	= 2	= 2	= 6
945	= 9	= 3	= 3	= 4
980	= 8	= 3	= 3	= 5
648	= 7	= 3	= 2	= 7
4148	= 6	= 3	= 3	= 4

4883 = 2 = 2 = 0 = 1 Answer
4095 = 2 = 2 = 0 = 2

4883 = 2 = 2 = 0 = 1 Proof

Compound Subtraction

Examples

	Yrs	Qrs	Bus
Ten'd	185	= 10	= 7
Received	93	= 15	= 0
Due	91	= 15	= 7
Proof	185	10	= 7

	Yrs	Qrs	Bus
Ten'd	310	= 0	
Take	85	= 15	
Answer	224	= 4	
Proof	310	= 0	

Troy Weight

Examples

	lbs	oz	pwt	gr
Given	96	= 8	= 16	= 13
Take	3	= 9	= 19	= 6
Answer	92	= 10	= 19	= 7
Proof	96	= 8	= 16	= 13

Avoirdupois Weight

Examples

From 9 = 9 = 12
Take 3 = 12 - 9

3 = 13 = 3

9 = 9 = 12

From 5 lb. 3 Ounc.
Take 4 - 1 - 15

4 = 0 - 12

5 = 2 - 13

Cloth Measure

Examples

From 27 = 1 = 2
Take 16 = 1 = 3

10 = 3 = 3

27 = 1 = 2

26 = 2 = 1

Yds. Qrs. Nails

26 = 2 = 1
19 = 3 = 2

8 = 3 = 3

26 = 2 = 1

Long Measure

Examples

Deg. Min. Sec. D. Yds. Ft. In. Barl.

56 - 13 = 5 = 26 = 2 - 1 = 8 - 1
19 = 15 = 2 - 29 - 1 = 2 = 9 = 2

38 = 60½ = 2 = 39 = 0 = 1 = 10 = 2 Sum

56 = 13 = 5 = 26 = 2 = 1 = 8 = 1 Rem.

Land or Square Measure

Examples

A R P. A R P.
From 17 = 1 = 19 Take 16 - 1 - 16
16 - 1 = 16

1 - 0 = 1 Answer

Solid Measure

Examples

	Tons	Ft	Inches
Sum	49	29	186
Take	19	34	1229
	29	122	693
	49	29	186

Dry Measure

Examples

1) Bu Pk Quart Bu Pk Quart
Sum 61 — 1 — 2 Take 5 — 1 — 4
5 — 1 — 4
55 — 3 — 6 Sum
61 — 1 — 2 Proof

Reduction Descending

Examples

1st In 28491 Inches how many Furs

28491 (
11935 — 1
20
12 | 11935 (995
108
43
44
95
84
11

Answer 4 ft 11 = 11 In

2nd In 63 Guineas at 28 Each how many Shillings

63
28
504
126
1764
2
3528 Answer

Continued

2nd In 37 Dollars how many half Dollars

37
6
222
12
144
222
2664
6
53 28 Ans

In 37 how many ½ Dollars

16
222
37
592 Ans

4th How often will a wheel of 16½ feet circumference turn round in the distance from Newburyport to Cambridge it being 42 miles

42
8
336
40
2/13440
16½

16½
33

80640
13440
215040
6720
221760
2

33/4435 20(13440 Answer
33
113
99
145
132
132
132
0

12.

Continued

Q. How many Dollars in £49 15s 0d

3/49 0 0 0
16 3 3 (3 1/3

6/15 0 0
2 5 0

22/4 0 0 (5 5
3 6 0
4 0 0
3 6 0
4 0

A. 165 = 33 - 9
2 - 5 0 - 0
5 - 5

Answer 165 = 88 = £

Q. How many Pounds Dollars and shillings of each are equal numbers

54
28
432
108

Shillings
20
1
Divisor

29) 1512 (56 Answer
135
162
162

Q. How many eagles Dollars & pieces of eight like number

Dollar
10 eagles
1000
100
12½
1112½
2
2225

172
54
1032
516
6) 6192000 (shillings
103200
100
1032002
2225) 4444400 (92 Answer 92 of each
4005
4450
4445) 5000 (68 and 68 pieces
4445
555

12½ eagles
25

Troy Weight

Examples

1st Ex. 3 ℔ 4 oz. How many grains

3 ℔ 4 oz.
12
708
3 4
4148
20
82960
24
331840
165920
2039040 Answer

2nd Ex. 47 ℔ 7 oz. How many table spoons weighing 2 oz. each and how many tea spoons 3 oz. 6 grains each can be made and in equal numbers each sort

47 ℔ 7 oz.
12
564
20
11283
24
45120
22560
6 96) 2709 20 (446
2424
2832
2424
4080
3636
24) 444 (18
24
204
192
12

2 oz. 3 oz. 6 gr.
3 6
5 6
24
136
5 0
6 6

Answer 446 of each sort and 18 sort 12 grains over

Troy Weight

Examples

1st In 24 ℔ how many ℥ and ℈

24
20

197
1

1971
28

15735
3583

55965
96

5345595
5596565

53224565
96

5153407424
53224565

14295924

2nd In 4996 Drams how many ℥ and ℈

16
16|4996|312 8/16
32
---
179 | 136
144 | 128
---
136 | 10
128

8

3rd In 93440 grains how many Drams ℈ and ℔

Answer 12 ℔ 9 ℥ 3 Drams 8 ℈

Apothecary Weight

Examples

1st In 12 ℔ 9 ℥ how many grains

12

153
8

1224
3

3672
28

93440

2nd In 93440 grains how many Drams ℈ and ℔

10|93440
3|3692
8|1224
12|153
12-9

Answer 12 ℔ 9 ℥

Cloth Measure

Examples

Pract. In 720 ells how many yards

4 | 2880

720 Ans

How many yards can be made of 2½ yds 1 yard wide
allowing ⅞ yds for a yard.

2 7/8 = 1

9 | 10 4/9 (15

9

10

9

1 4/9

4/9 (2

4/9

14

14

2

9

Answer 15 yards 2 Nails 2 over

Pract. # Dry Measure

Examples

In 49 bushels how many pints

49

196

1568 Ans

Liquid Measure

Examples

1st Q. How many gills in 3 hogsheads how many pints

3
63
189
4
756
2
1512
4
6048 Ans

2nd Q. How long will a barrel of cider last if you drink 6 quarts per day

2nd
31½
2
1
6)126(21 Answer
12
6
6

3rd Q. How many staples will it take to make a load or ton allowing 3 staples to make a gill

4
63
252
4
1008
8
8064
3
24192 Ans

4th Q. How many rds in 88 yards

88 5½
11)176 2
16 Answer

5th Q. How many inches is a mile

40
2)3520 66
20
1320
5280
5120
5160
5280
12
63360 Answer

Time

Examples

1st In supposing a man to be 21 years old how many seconds has he lived allowing 365¼ Days 6 hours to the year

Days Hr
365¼ = 6
24
1466
930
8766
21
8766
17532
184086
60
11045160
60
662709600 Seconds Answer

Long Measure

Examples

1st How many steps do you take in going a mile if you step 2 feet 2 inches at a step

Ft In
2 - 2
12
24

5 9
40
2) 320 5½
1600
160
1760
3
5280
12
10560 (2436
5280
63) 60 (2436 Answer 2436 steps 2 inches over
52
110
104
68
63
5
12
60
12
24

4th

Continued

2nd The forward wheels of a waggon are 14½ feet in circumference and the hind wheels 15 feet 9 inches how many more times will the forward wheel turn round than the hind ones in going 64 miles

24 9/11	14 1/2	63 3/4
1984/40	29	63
2/793695/11/2		
396800		
39680		
436480/3		
130944/2		
2/26188 8 0 (90306		
21		
88		
87		
180		
174		
6		
29		

Feet

63

1309440/4

63/5237760(83139

504

197

189

87

63

246

189

570

567

3

63

The forward wheels turn round 90306 times

83139

The hind wheels 7167 Answer

Land or Square Measure

Examples

1st. In one mile how many square rods

320
320

6400
960

102400 Answer

2nd. In Andover 16 feet square how many square feet

16
16

96
16
---
256 Ans

3rd. How many acres in a field 36 rods long and 32 wide

36
32

72
108
---
160 | 1152 (7 Answer 7⅕ Acres
1120
---
32 | 32 | 1
160 | 5

4th. How many shingles will cover a house 40 feet long and 30 feet rafters allowing each shingle to be 4 inches wide and each course 6 inches

the length of the rafters

30
30

60
40

2400
144

9600
4600
400
4

345600

the length of the house

4
6

24

one shingle covers
24 inches

24 | 345600 (14400 Ans
24

105
96

96
96

00

20

Cubic Measure

Examples

1st. In 5 cords of wood how many cubic inches

128
5

640
1928

5120
1280
4480
640

1105920 Answer

2nd. How many bricks 8 inches long 4 inches wide and 2½ inches thick will it take to build a house 44 feet long 40 feet wide and 20 feet high and the walls 12 inches thick

44 20 40 8 × 4 × 2½
12 12 12 4
---- ---- ---- ----
528 240 480 2)32½
240 2½
----- ----- ----- ----
21120 19200 64
1056 960 16
------ ------ ------ ---
1267200 11520012 80 Divisor
12 12
---------- ----------
25344000 138240002
12672000 2
---------- ----------
152064002 276480000
2 304128000

304128000

80) 3806080 (47576 Answer
320

606
560

460
400

608
560

480
480

Single Rule of Three

Lesson 1st

1st If 6 lb of sugar cost 4/6 what will 30 lb cost

cost lb cost lb

6 — 4/12 — 6 — 30

54 12 20

30 27 22

6 / 1620 (270 (220 (

12 24 20

42 30 2

42 24

0 6

Answer 1£ 2s 6d

2nd If 15 yards of cloth cost 3£ what will 2 yards cost

cost £ yds £ yds

15 — 3 — 2

2

6

20

15 / 120 (8 Answer

120

3rd If 3 cwt 2 qrs of sugar cost 3£ 10s what will 4 cwt 1 cwt 2 qrs 10 lb

cwt qrs £ s cwt qrs lb

3 — 2 — 3 — 10 — 1 — 2 — 10

4 20 4

14 140 6

28 178 28

112 1520 48

28 1330 13

392 190 178

20

392 / 3320 (8 6 (4 / 392 / 480 (1

3136 6 392

184 0 88

168 2 392

16 8

12

392 / 192 (3 Answer 4£ 6s 3¼d

1176

120

Continued

11th If 57 yards cost 69 £ what will 9 yards cost

57 yds. £ 69 yds. £

57 = 69 = 9

9

57 | 62 | 10 £
57

51
20

57 | 1020 | 17 s
57

450
399

51
12

57 | 612 | 10 d
57

42
4

57 | 168 | 2 qr
104

54

57

Answer

5th If 8 cwt of sugar cost 45 £ 2 s 4 d. what is that per cwt cwt £ s d cwt

8 = 4 5 - 2 - 4 - 1

20

902 12 20

8 | 10828 | 1355 | 112 | 5 £
8 100
12 s

28 12
24 15
12
42 3 3
40 2 4
9 d
28
24

4
4

8 | 16 | 2 qr or £ s d
16 Ans 5 = 12 | 9½

6th If my income be 109 guineas per annum I desire to know what I may spend per day so that I may lay up £45

Guineas Day £ s d Day

109 365 = 109 = 12 = 1

20

218 365 | 2182 | 5
20 1825

357
12

654
357

365 | 3924 | 1
365

274
4

365 | 1096 | 3
1095

1

Answer 5 | 1 3/4 1/365

Continued

9 Ans

If my salary be 43 £ 12 s 0 d per annum what does it amount to per week

Days £ s d Day

365 — 43 — 12 — 5 — 7

20

872

12

1749

872

10469

12

365 | 73283 | 200 | 16

730 | 12

283 | 40

4 | 72

365 | 1132 | 8

1095

37

Answer 16 s 8 d 37/365

If my income be 16 s 8 d 37/365 per week what is that per annum

Days s d Day

7 — 16 — 8 — 37/365 — 365

12

40

16

200

4

808 + 37

365

4022

4821

2409

7 | 2931 32 | 418

28

13

9

41

35

53

49

42

42

1 | 12

4 | 48

16

27

24

36

36

1 | 12

4 | 48

16

32

24

8

20 | 892 | 43 £

80

92

80

12 s

Answer 43 £ 12 s 0 d

Continued

9th If I am to pay 1£ 9s for milk for fostering
& wd what must I give for 37 wds

wds	£	wds	
1	=	1	— 9 — 37

12
19
37
133 20
57
12) 903 (58 (2
60 40
103 18
96
7

Ans £ 18 9 7

10th How many yards of cloth may be bought for 57£ 13s when 1 yd 3qrs 1£ 15/5½ c

£		d		qrs	£	
1	=	15	=	5	=	1 = 1½ = 57 = 13

20
95
12
905
4
3622

2
19
1153
12
13836
4
55344
19
498096
55344

3622 / 10515344 (2290 (145
2
44
32013
32558
1154
2
2312
4
3622 / 9248 (2
9144
2004
3622

Answer 145 yds 2qrs

2004
3622

Continued

11 $\frac{11}{16}$ Sold a vessel for 15000 Dollars and Jonni'd

$\frac{5}{16}$ what was my part of the money

16 = 25000 = 5

16 | 125000.00 (7811
112
130
128
20
16
16 | 400 (.25
32
80
80

Ans. 7811 $\frac{5}{16}$ Dollars

12½ The united states pay 6 per cent Interest on part of their domestick Debt and supposing they could borrow money in Holland for 5% per cent how much would they save annually by borrowing 2 millions of Dollars in Holland and applying to the payment of said Debt

Dollars
2 000 000 2%

2000000
500000

2500000

Answer 25000 Dollars

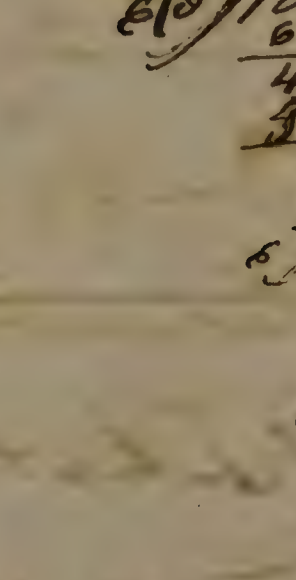
Continued

A gentleman sent A ship on A whaling voyage and agreed to divide the proceeds of the voyage into 60 shares and give the captain 4 the ship afterwards returned with A cargo worth 10 thousand Dollars A Demand the captains share

Shares Dol Shares
60 — 10000 — 1

Dol
166 = 666 2/3
4
666 = 6666 2/3

Dol A mills
Ans 666 = 66 = 6 2/3



A merchant in connecticut paid A merchant in england £4349 & 16 d 4 in Dollars at 4/6 each how much was that valued at in newengland currency

£ s d
4 - 6 = 6 = 4349 = 16 = 4
12
54

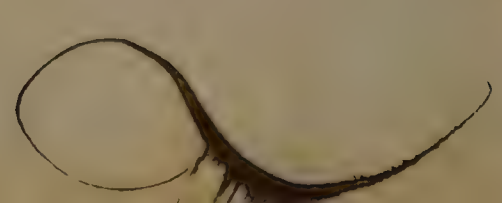
20
86996
12
173992
86996
1043952
6

54 | 6263736 | 115998 20
54 | 5799 = 15
83
54
323
270
537
486
516
486
276
270
6

54 | 12 | 1 3
54
18 3 4

Answer £ 5799 15 0

£1 3



Continued

15th " How much must you give for A keg of cider containing
7½ gallons at the rate of 2 Dollars per barrel

gal	Dol	gal
31½	2	7½
2		2
63		15

63 | 30 | 47 (47 Ans 47 cts 6 mills 12/63
251
480
441
63 | 39 | 6
378
12
63

16th " Suppose you have 476 Dollars 37 cts of Paper Debt
and every Dollar is worth 65 cts how much is the
whole worth

A	cts	Dol	A
100	= 65	= 476	= 37
		65	
		2381	= 85
		28582	= 2

100 | 30964 = 65 (309/64 Ans 309 Dol 64 cts
300
964
900
640
600
404
400
5

Continued

Harry had apples of which were worth 6

Billy had pears of which were worth 2

I demand how many pairs ~~Billy must give Harry~~

Harry had pears of which were worth 6

Billy had apples of which were worth 2

I demand what number of apples Billy must give Harry for 15 of his pears

Pears Pears

9 = 6 = 15

2 | 30 (10 Ans

Apples

2 = 8 = 10

2 | 80 (40 Ans

Answer 40 Apples

A man bought A piece of cloth 44 yards wide and 11 quarters long how many yards of 5/4 cloth will line it

Qr Qr Qr

Ans 3 = 11 = 9

3 | 99 (33 qrs

9

9

4 | 33 (8 Answer 8 yards 1/4

32

1

4 | 4 (1

Continued

14th Q. Said Harry to Dick my horse and mare are worth 31 guineas but the mare is worth 11 times as much as the horse how much more is there in it

Parts guineas Part

12 — 31 — 1

28

31

12 | 91 (7

84

7

17 = 7

11

4 = 3 = 3 Answer

20th Q. If my horse and double are worth 18 guineas and my horse be worth 6 times as much as my double horse what is the value of my horse

Parts guineas Part

As 7 — 18 — 1

28

144

36

7 | 504 (72

49

14

14

72

8

8 | 432 (72 Dollars

32

12

12

Continued

21st 11 mo. A sister using 4 locks the first will empty it in ten minutes the second in 20 the third in 40 the fourth in 30 minutes in what time will all four running together empty it

Sisters		times	
1	----	6	in 60 minutes
2		3	
3	----	1½	1 sister 1 Min 1 sister
4		0 ¾	60 = 11¼ = 60 — ¼
		11 ¼	4/45 | 240 | 5
			225
			15 | 15 | 1/3

45 Ans 5⅓ minutes

22nd 11 mo. A and B set out from the same place and travel the same road but A goes 5 days before B at the rate of 20 miles per day B follows at the rate of 25 miles per day In what time will the distance between them be

Miles	Day	Mile	Day	Miles	Day	Miles
25	1	= 20	= 5	5	= 1	20
20		5				1
5		100		5	100	(20 Days Ans
					10	

Miles Days

1 = 25 — 20

20

1 \| 500 (500 Miles Ans

5

500

Continued

23 2nd/11 A can do a piece of work in 3 weeks & B can do thrice as much in 2 weeks and C 5 times as much in 12 weeks in what time can they do it jointly

Job

C can do the Job 5 times in 12 weeks

4½

4

13½

If 3 Job

3 = 1 = 12

1

3 | 12 (4

12

Job Weeks Job

13½ — 12 — 1

2 2 2

27 24

6

27 | 1 4 4 (5

1 3 5

9

24 | 108 (4

108

If 27 Job

27 = 3 = 12

1

3 | 36 (

36

0

Answer 5 Days 4 hours

24 11/11 The hour and minute hand of a clock are exactly together at 12 o'clock when are they next together

11 = 1 = 12

1

11 | 12 (1 hour

11

60

11 | 60 (5 Min

55

5

Ans 1 hr 5 5/11 Min

32

Method

of assessing taxes on personalty

1st An inventory of the value of all the estates both real and the number of polls for which each person is taxable must be taken in separate columns. Then to know then to know what must be paid on the Dollar make the total value of the inventory the first term the taxes to be assessed the second and Dollar the third and the fourth will show the value on the Dollar

2nd Make a table by multiplying the value on the Dollar by 1. 2. 3. 4. 5. &c

3rd Show the inventory to the real and personal estates of each man and find them separately in the table which will show you many hundredths shall be of the tax for real and personal estate

If any part of the tax be averaged on the polls before stating to find the value on the Dollar deduct the sum of the average tax from the whole sum to be assessed for which average make a separate column as well as for the real and personal estate

Example

Suppose the general court should grant a tax of 75000 Dollars of which a certain

(Continued

[illegible] being 624 one thousand seven hundred and [illegible] inventory
is 6578 dollars what will it be on the dollar and
what is it per cent by this inventory we have to find
how many real 856 Dollars personal 1723 Dollars and he has
4 Notes
1 = 75 = 624
75
1248
4568
456816

Dollars
3250 72
4568 72
2782 72

64568 = 2782 = 72 = 1

64568] 2782 = 72 [4 cents on the Dollar
2782 72

Dollars	Cents	Dollars	Cents	Dollars	Cents
1	4	20	80	200	8
2	8	30	1=20	300	12
3	12	40	1=60	400	16
4	16	50	2=00	500	20
5	20	60	2=40	600	24
6	24	70	2=80	700	28
7	28	80	3=20	800	32
8	32	90	3=60	900	36
9	36	100	4=00	1000	40
10	40				

Now to find what 1/2 cent is
this rest is 856 Dollars
by the table the 1/2 cent is 72 Dollars

Dol cents
72 20
2 24
24
4 12
5 00
41 56

Dol cents
72 20
2 24
24
4 12
5 00
41 56

34

Rule of Three Inverse

Examples

1st Suppose I lend my friend 350£ for 5 months he promising the like kindness but when requested can chose but 125£ how long may I stay it to balance the favour

£ Months £

350 = 5 — 125

125 | 1750 (14 Months Answ^r

12

50

00

2nd Suppose 450 men are in a garrison and their provision are calculated to last 9 months how many must leave the garrison that the same provision may suffice for those that remain 3 months?

Months Men

5 — 450 — 9

5

9 | 2250 (250

18

45

45

0

250 — 450

250

200

Answer 200

Continued

3 men

If 3 men perform a Journey in 15 days when the day is 12 hours long in how many will he do it when the day is but 10 hours long.

hours Days hours
12 = 15 = 10
12
30
15
10 / 150 (15 Days Answer
10
50
50

What number of men must be employed to finish a piece of work in 9 days which 15 men would do in 30 days

Days Men Days
30 = 15 - 9
30
9 / 450 (50 Men Ans
45
0

If a [illegible] will feed 6 men 91 days how long will it feed 21 men

men Days men
6 - 91 = 21
6
21 / 546 (26 Days Answer
42
126
126

Double Rule of Three

Examples

If 100 £ gain 6 £ in A years what will 400 £ gain in 9 months

£ Month £ Interest
100 = 12 = 6
400 = 9 =

9
3600
£

100
12
1200 Divisor

12/00 | 21 6 | 00 | 18 Answer
12
96
96

If 400 £ gain 18 £ in 9 months what is the rate per cent per annum

£ M £
400 = 9 = 18
100 = 12 =
12
1200
18
9600
2 00

400
9
3600

36/00 | 2 1 6 | 0 0 | 6 Answer
216

What principal at 6 per cent per annum will gain 18 £ in 9 months

£ M £
100 = 12 = 6
12 9 = 18
1200
18
9600
1200

6
54

54 | 2 1 6 0 0 | 400 £ Answer
216
00

Continued

If 8 men spend 32£ in 13 weeks what will 24 men spend in 52 weeks

Men Weeks £
8 = 13 = 32
24 = 52

32 / 104 / 156 / 1664 / 24 / 6656

13 / 8 / 104

8328 / 104 | 99936 (384 Answer

312 / 873 / 832 / 416 / 416

If the freight of 9 hhds of sugar each weighing 12 cwt 20 leagues cost 16£ what must be paid for the freight of 50 tierces to each weighing 2½ cwt 100 leagues

hhds leagues £
9 = 20 = 16

2½ / 100 / 25 / 200 / 100 / 12500 / 16 / 75000 / 12500

125 / 100 / 25 / 125

9 / 12 / 108 / 20 / 2160

2160 | 2000000 (0 (92 128/216 Answer

1944 / 560 / 432 / 128

55

Continued

There was a certain edifice completed in
a year by 20 workmen but the same
being demolished it is ~~necessary~~
necessary Ahott Just such another
should be built in 5 months Demand
the number of men to be employed
about A

Men Months edifice
20 = 12 = 1
5 = 1

12
5/60(48
20
40
40

48 Men Answer

If 6 men build a wall 20 feet long
6 feet high and 4 ft thick in
16 days in what time will 24 men
build one 200 ft long 8 ft high and 6 ft thick

Men Days ~~ft~~ ft
6 = 16 = 20 × 6 × 4
24 = .. 200 × 8 × 6

4 8
6 6
24 48
20
480

480
1920
96
1152

48
1600
300
9600
16
57600
9600
153600
6
1152/921600(800 Days Answer
9216
0

Vulgar Fractions

Examples

What is the greatest common measure of 1836 & 3996

3996 = 1044

1836 | 3996 | 2
3672
324 | 1836 | 5
1620
216 | 324 | 1
216
108 | 216 | 2
216

1044 | 1044 | 9
972
72 | 108 | 1
72
36 | 72 | 2
72

36 the answer required

What is the greatest common measure of

1224 = and 1080

1080 | 1224 | 1
1080
144 | 1080 | 7
1008
72 | 144 | 2 Answer 72
144

Problem 2nd

Examples

What is the least common multiple of 4 - 6 - 10 - 16 and 20

4	6 = 10 = 16 = 20
5	6 = 10 = 4 = 5
2	6 = 2 = 4 = 1
	3 = 1 = 2 = 1

4 × 5 = 20 × 2 = 40

40 × 3 = 120

120 × 2 = 240 Ans

40

Continued

What is the least common multiple of 6 and 8

2 | 6 — 8
3 — 4

2 3 6 4 24 Ans

What is the least number 3 — 5 — 8 and 10 will measure

5	3 = 5 — 8 = 10
2	3 — 1 — 8 — 2
	3 — 1 — 4 1

5 2 10 3 30 4 120 Answer

What is the least number which can be divided by the 9 digits separately without remainder

9	1	2	3	4	5	6	7	8	9
	1	2	1	4	5	2	7	8	3
2	1	1	1	2	5	1	7	4	3
2	1	1	1	1	5	1	7	2	3

1 2 6 2 12 4 60 7 420 2 840 3 2520 Answer

Reduction of Vulgar Fractions

Lowest Terms

Reduce $\frac{288}{480}$ to its lowest terms

$$\begin{array}{r|lll} 4 & \frac{288}{480} & \frac{36}{60} & \frac{6}{10} \quad \frac{3}{5} \\ & & 6 & 2 \end{array}$$

$\frac{3}{5}$ Answer

Reduce $\frac{57}{456}$ to its lowest terms

$$57 \Big| \frac{57}{456} \quad \frac{1}{8}$$

Answer

Reduce $\frac{1429}{2858}$ to its lowest terms

$$1429 \Big| \frac{1429}{2858} \quad \frac{1}{2}$$

Answer

Case 2nd

Examples

Reduce a mixed number to its equivalent improper fraction

Reduce $36\frac{5}{8}$ to its equivalent improper fraction

$$\begin{array}{r|ll} 8 & 36\frac{5}{8} & \\ & 293 & \end{array} \qquad \frac{293}{8}$$

Answer

Continued

2 Reduce $65\frac{3}{19}$ to its equivalent improper fraction

$65\frac{3}{19}$

19

880

65

$1241\,0$

$\frac{1241\,0}{19}$ Answer

Case 3rd

To reduce a whole number to an equivalent fraction having a given denominator

Examples

Reduce 6 to a fraction whose denominator shall be 8

$\frac{6}{48}$ $\frac{48}{8}$ Ans

Case 4th

To reduce an improper fraction to its equivalent whole or mixed number

Examples

Reduce $\frac{293}{8}$ to its equivalent whole or mixed numbers

$\frac{293}{8}$

$36\frac{5}{8}$ Answer

Case 5th.

To reduce a compound fraction to an equivalent one

Examples

1 Reduce 1/2 of 2/3 of 3/4 of 4/5 to a simple fraction

1/2 of 2/3 of 3/4 of 4/5

2/3 — 4/3 — 12/2 — 24

6/24/120 — 4/20/20 — 1/5 — Ans 1/5

2 Reduce 3/4 of 4/5 of 5/6 of 11/12 to a simple fraction

3/4 of 4/5 of 5/6 of 11/12

4/5 — 3/4 — 12/5 — 60/11 — 660

6/120/1440 — 10/120/240 — 11/24 — Ans 11/24

Case 6th.

To find the value of a fraction in the known parts of the integer or of any weight measure &c

Examples.

64

Continued

Case 6th

To reduce fractions of different denominators to equivalent fractions having a common denominator

Examples

Reduce 1/4 2/5 and 5/8 to equivalent fractions having a common denominator

1	2	5
4	5	8
2	2	8
8	5	5
8	8	4
64	40	160

$\frac{5}{5}$ $\frac{8}{8}$
25 40
100 160

$\frac{8}{8}$
40
160

$\frac{40}{160} = \frac{64}{160} \quad \frac{100}{160} \quad \frac{160}{160}$ Answer

---

Reduce 1/2 2/3 3/4 5/6 and 7/8 to fractions having a common denominator.

1	2	3	5	7
2	3	4	6	8
2	4	5	8	
4	12	20	18	
4	6	8	8	
16	72	160	144	
6	8	3	3	
96	576	480	432	
8		2	2	
768		960	864	

7	8
6	6
42	48
4	4
168	192
3	3
504	576
2	2
1008	1152

$\frac{576}{1152} \quad \frac{768}{1152} \quad \frac{864}{1152} \quad \frac{960}{1152} \quad \frac{1008}{1152} \quad \frac{1152}{1152}$ Answer

Rule 2nd

To reduce any given fractions to others which shall have the least common denominator

Examples

Reduce 1/3 3/4 and 7/8 to fractions having the least common denominator

$$\begin{array}{r|lll} 4 & \frac{1}{3} & \frac{3}{4} & \frac{7}{8} \\ \hline 3 & & & \\ \hline 12 & 4 & 3 & 7 \\ & 8 & 6 & 7 \\ & 24 & 18 & 21 \end{array}$$

Answer

Case 3d

To reduce A fraction of one denomination to the fraction of another but greater retaining the same value

Examples

Reduce 3/5 of a penny to the fraction of a pound

$$\begin{array}{r|lll} 5 & 3 & 1 & 1 \\ \hline 12 & \frac{12}{5} & 20 & \\ & \frac{60}{20} & & \\ 1200 & & & \end{array}$$

3/1200 — Answer

Continued

Reduce 3/4 of 1/4 of 1/12 of 1/20 of a pound Troy to the fraction of a pound

3/4 1/4 1/12 1/20

4 4 12 20

4
16
12
192
20
3840

3/3840 = 1/1280 Answer

Reduce 5/8 of 1/12 of a penny to the fraction of a guinea

5/8 1/12 1/28

8
96
12
1152
28
26885

5/26885 Answer

Reduce 1/7 of 1/16 of a shilling to the fraction of a minute

12 1/20

12 1/36

19
324
36
684

6 12 2 1 / 1684 114 57 Answer

Reduce 4/9 of an ounce to the fraction of a [illegible] avoirdupois

4/9 1/16

7
112

4/112 = 1/28 Ans

Continued

Reduce 3d 6h to the fraction of £1

3 — 6
12
42

42 | 1 | 1
1 | 12 | 20
12
240

6 | 42 | 17 Ans
6 | 240 | 40

Reduce 13d 6h to the fraction of a pound

13 = 6
12
162

162 | 1 | 1
1 | 12 | 22
12
264

2
3 | 162 | 54 | 27 Ans
3 | 264 | 88 = 44

Reduce 4/5 of a pound to the fraction of a guinea

4 | 20 | 1
5 | 1 | 28/5
140

2 4/5 | 80 | 140 | 2 | 4 Ans
80 | 140 | 14 | 5

Reduce 7/8 of a pound to the fraction of a ~~the~~ ~~troy~~

7 | 1 | 1
8 | 20 | 12
8
160
12
1920

7
1920 Answer

Reduce 8/9 of a ~~the~~ Avoirdupois to the fraction of a troy

8 | 1 | 1
9 | 2 8/9 | 4
9
25 4/9

100 8/9 | 8 | 8 | 1
100 8/9 | 12 6

Continued

Reduce $\frac{1}{4}$ of a farthing to the fraction of a shilling

$\frac{1}{4} \quad \frac{1}{4} \quad \frac{1}{12} \quad \frac{1}{4} \quad \frac{1}{4} \quad \frac{1}{192}$ Ans

---

Cases 4th

To reduce a fraction of one denomination to the fraction of another but less retaining the same value

Examples

Reduce $\frac{1}{400}$ of a £ to the fraction of a penny

$\frac{1}{400} \quad \frac{20}{1} \quad \frac{12}{1} \quad \frac{12}{20} \quad \frac{4}{240} \quad \frac{2}{480} \quad \frac{6}{10} \quad \frac{3}{5}$ Answer

---

Reduce $\frac{1}{1280}$ of a pound to the fraction of a farthing

$\frac{1}{1280} \quad \frac{20}{1} \quad \frac{12}{1} \quad \frac{4}{1}$

$\frac{1}{1280} \quad \frac{4}{320} \quad \frac{4}{80} \quad \frac{12}{20} \quad \frac{3}{5}$

Continued

Reduce $\frac{5}{2688}$ of a guinea to the fraction of a penny

$\frac{5}{2688} \quad \frac{28}{1} \quad \frac{12}{1}$

$28 \times 12 = 336$

$6 \times 7 = 42$

$5 \times 7 = 35$

$5 \times 8 = 40$

$8 \overline{)1680} \quad 210 \quad 35 \quad \frac{5}{8}$ Answer

$336 \times 5 = 1680$

Reduce $\frac{1}{28}$ of a lb avoirdupois to the fraction of an ounce

$\frac{1}{28} \quad \frac{16}{1}$

$4 \overline{)16 \quad 4}$ Answer

28

Reduce $\frac{1}{57}$ of a mirade to the fraction of a shilling

$\frac{1}{57} \quad \frac{36}{1}$

$3 \overline{)36 \quad 12}$ Answer

$57 \quad 19$

Reduce $\frac{4}{7}$ of guinea to the fraction of a £

$\frac{4}{7} \quad \frac{28}{1} \quad \frac{1}{20}$

$28 \times 4 = 112$

$7 \times 2 = 14$

$2 \overline{)112 \quad 14} \quad \frac{56}{70} \quad \frac{8}{10} \quad \frac{4}{5}$ Answer

$140 \quad 70$

Reduce $\frac{7}{1920}$ of a lb troy to the fraction of a [illegible]

$\frac{7}{1920} \quad \frac{12}{1} \quad \frac{20}{1}$

$20 \times 12 = 240$

$240 \times 7 = 1680$

$6 \times 5 = 30$

$8 \overline{)1680 \quad 210 \quad 35 \quad 7}$ Answer

$1920 \quad 240 \quad 40 \quad 5$

Continued

Reduce $\frac{1}{126}$ ℔ Avoir to the fraction of a ℔ Troy

$\frac{1}{126} \cdot \frac{112}{1}$ $\quad$ 7 / 112 / 16 / 2 Answer

126 / 18 / 9

Case 7th.

To find the value of a fraction in the known parts of the integer as of coin weights measure &c

Examples

What is the value of $\frac{5}{7}$ ℔ Troy

$\frac{5}{7}$ $\quad$ Answer $14 = 3 - 1\frac{5}{7}$ ℥

$\frac{20}{7 / 100 (14}$
$\frac{7}{30}$
$\frac{28}{2}$

What is the value of $\frac{9}{24}$ of a shilling

$\frac{9}{24}$ $\quad$ Ans $4\frac{1}{2}$

$\frac{72}{24 / 108 (4}$
$\frac{96}{12}$

$7 / 24 (3$
$\frac{21}{3}$

$7 / 12 (1$
$\frac{7}{5}$

$24 / 48 (2$

What is the value of $\frac{17}{29}$ of an £

$\frac{17}{29}$ $\quad$ Ans 11s 9d $\frac{11}{29}$ 3q

$\frac{5}{29 / 68 (2}$
$\frac{58}{10}$

$29 / 204 (10$
$\frac{29}{145}$
$\frac{145}{84}$
$\frac{84}{14}$

$29 / 280 (9$
$\frac{261}{19}$

$29 / 224 (7$
$\frac{203}{21}$

$\frac{12}{29 / 228 (7}$
$\frac{203}{25}$

$\frac{24}{1}$
$\frac{1}{24}$

Continued

What is the value of $\frac{4}{5}$ of a pound Troy weight?

4
16
5) 64 (12
50
14
10
4

Answer

16
5) 64 (12
50
4
5

What is the value of $\frac{3}{5}$ of a ℔ Troy

3
12
5) 36 (7
35
1
20
5) 20 (4
20

7 oz 4 part Answer

What is the value of $\frac{3}{13}$ of a ton

3
20
13) 60 (4
52
8
12
13) 96 (6
78
18
16
2
12
2
12 2 (14
13) 12 9
13
62
52
10
13
13) 16 0 (12
13
30
26
4

Answer 4 cwt 6 qr 14 lb
14 lb $\frac{12}{13}$ Answer

57.

Continued

What is the value of $\frac{6}{5}$ of Any

$\frac{6}{4}$

9 | 24 (2
18

$\frac{6}{4}$

9 | 24 (2
18

3 | 6 $\frac{2}{3}$
9

Ans 2 yr 2 3. Ans

What is the value of $\frac{7}{5}$ of one shilling

$\frac{7}{5}$

8 | 35 (4
32

$\frac{3}{4}$

4 | 12 (1
8

2 | 4 $\frac{1}{2}$

Ans 4 yr 1½ Ans

What is the value of 9/13 of a Day

9
24
13 | 216 (16
13

78
65

130
117

13 | 130 (36
117

13

Ans 16 hours
M
36 - 55 $\frac{5}{13}$ min.

9
24
13 | 216 (16
13

78
65

130
117

13 | 130 (36
117

13

12
60
13 | 720 (55
65

70
65

5

Continued

What is the value of $\frac{5}{6}$ of 1 mile

For Rule

6 26 11 Answer

5
6 | 40 (6
36
4
4
6 | 44 (7
42
2

6 | 66 (11
6
6

What is the value of $\frac{3}{5}$ of 1 mile

3
36
5 | 108 (21
10
8
5
3
12
5 | 36 (17
25
11

7

$21 = 17\frac{1}{5}$ Answer.

What is the value of $\frac{6}{7}$ of an Acre

4
7 | 24 (3
21
3
40
3 | 120 (17
7
50
49
1

Answer 3 rod $17\frac{1}{7}$ Poles

Case 10 th

To reduce any given quantity to the fraction of any greater denomination of the same kind

5/1

Continued

Examples

Reduce 4 & 3/4 - 5/7 to the fraction of a pound

20 / 12 / 240 / 4 / 96 / 7 / 6720

14 = 3 = 1 5/7 / 14 / 71 / 14 / 171 / 4 / 685 / 2 / 4800

4/4800 — 100 — 20 — 5/7 Ans

6720 — 140 — 28

Reduce 7 oz 4 pwt to the fraction of a pound

oz pwt

12 / 20 / 240 / 24 / 96 / 7 / 6720

7 — 4 / 20 / 4/144 — 36 — 6 — 3 Answer / 240 — 40 — 10 — 5

Reduce 18 pts to the fraction of a guinea

2/18 — 9/14 Ans

Reduce 5 qr 9 lb to the fraction of a Ton

6 / 12 / 72 / 4 / 288

5 — 9 — 2 / 12 / 69 / 4 / 2/276 — 90 — 15 Ans / 3/288 — 96 — 16

Continued

Reduce 21 d 9 h to the fraction of a
month

36
12
72
36
432
2160

$21 = 7 - \frac{1}{5}$

12
259
5
1296 216 36 6 1
6 | 2160 360 60 10 5 Ans

Addition of Vulgar Fractions

Examples

Add $7\frac{4}{5}$ $\frac{5}{9}$ of $\frac{3}{8}$ and 9 together

$\frac{39}{5}$ $\frac{5}{9}$ of $\frac{3}{8}$ $\frac{5}{15}$ $\frac{15}{56}$

9
56

Then $\frac{39}{5}$ $\frac{15}{56}$ $\frac{2}{1}$

56
5
280

15
39
585
1254
2184

5 7
7
39 2
5
1960
2184
75
280 42197 ($150\frac{77}{280}$ Ans
280
1419
1400
19

16

Continued

What is the amount of $\frac{7}{10}$ of $4\frac{5}{8}$ $\frac{3}{4}$ of $\frac{1}{3}$ and $\frac{1}{4}$

$\frac{7}{10} \times \frac{37}{8} \quad \frac{3}{4} \times \frac{1}{3} \quad \frac{1}{4}$

$\frac{37}{8} \quad \frac{4}{12} \quad \frac{37}{4}$

$\frac{3}{12} \times \frac{1}{4}$

$\frac{7}{10} \quad \frac{37}{8} \quad \frac{1}{4} \quad \frac{37}{4}$

$\frac{37}{70} \quad \frac{10}{8}$

$\frac{70}{370} \quad 80$

$\frac{7}{37}$

259

~~$\frac{370}{1}$~~ $259 \quad \frac{1}{4} \quad \frac{37}{4}$

$\frac{259}{320} \quad \frac{4}{1036} \quad \frac{37}{4}$

$4144 \quad 148$

80

11840

4144

320

$\frac{80}{4}$

$\frac{320}{1280}$

$1280 \overline{)16304} (12\frac{944}{1280}$ Ans

1280

3504

2560

944

Continued

Add 1/4 of 3/7 and 4/5 of penny together

1 20 12
3 1 1

20
12
240
3 | 2 4 0
9 3

3 12
4 1

12
1
36
7

80 36 4
3 7 5

36 80 7/4
108 560 28
5 5
540 2800 3
84
2800
540
105 | 3424 (32 64/105 Answer
315 9
274 14 | 322 — 8 64/105 Ans
210 8
64

5/7
35/3
105

Add 1/4 of week 1/3 of day 1/20 of an hour and 3/4 of a minute together

1/4 7 24 60
4 1 1 1

60
24
240
12
1440
7
4 | 10080 (2520
4 1

1 60
2 1

2 | 60 30
2 1

2520 480 30 3
1 1 1 4
480 2520 3 30
4 4 120
1920
10080
120
3
4 | 12123
3030 — 3

1 24 60
3 1 1

60
24
240
12
1440
3
3 | 10080 (3360
3

2520 480 30 3
1 1 1 4
2520 3 30
4 3 120
10080

24
40 | 3030 (75 2
30 4/5
30 2

60
4 | 180
45

Answer 2 days 45 minutes

Subtraction of Vulgar Fractions

Examples

From $\frac{3}{4}$ take $\frac{5}{28}$

$\frac{5}{28}$ $\frac{2}{3}$ $2\frac{11}{56}$ $\frac{5}{28}$

$\frac{3}{4}$ $\frac{5}{28}$ $\frac{28}{5}$

$\frac{1}{5}$ $\frac{3}{84}$ $\frac{112}{20}$

$\frac{20}{84}$ $\frac{2}{5}$

$\frac{84}{112}$ $\frac{5}{14}$ $\frac{5}{9}$ Answer

From $\frac{49}{50}$ take $\frac{5}{9}$

$\frac{49}{50}$ $\frac{5}{9}$

$\frac{5}{250}$ $\frac{49}{441}$

$\frac{2}{17}$ $\frac{441}{450}$

From $13\frac{1}{4}$ take $1\frac{1}{7}$

$\frac{149}{4}$ $\frac{8}{9}$

$\frac{139}{7}$

$\frac{7}{4}$

$\frac{7}{28}$

$\frac{149}{7}$ $\frac{139}{7}$

$\frac{1}{137}$ $\frac{142}{1043}$

548 548

$28\overline{)495}(17\frac{19}{28}$ Ans

28

215

196

19

From $\frac{1}{4}$ of 1 £ take $\frac{2}{10}$ of a shilling

$\frac{1}{4}$ $\frac{20}{1}$ $4\frac{2}{4}$ $\frac{5}{1}$

$\frac{5}{1}$ $\frac{9}{10}$

$\frac{2}{9}$ $\frac{5}{50}$

$10\overline{)41}(4\frac{1}{10}$ Answer

40

Continued

From 5/7 of an ounce take 3/4 of a pint

5/7 × 20/1 × 21/5 × 3/4 × 7/24

4 1 1 1 9 7 6
3 3 5 4 8 1

13/3 × 17/32 × 4/32

13 1 7 6
3 5 32 1

13/3 × 5/15 × 32/30 × 43/480

43/480 ÷ 5/24 × 6/1

480/5 = 96

24/96 = 1/4

6/1 × 1/4 = 6/4

6/4 = 1 2/4 = 1 1/2 Ans

1 Ans 1 pint 12 grains

Multiplication of Vulgar Fractions

Examples

What is the continued product of 1/3, 1/5, 7/8 and 6

4 1 1 1 9 7 6
3 3 5 4 8 1

13/3 × 17/32 × 4/32

13 1 7 6
3 5 32 1

13/3 × 5/15 × 32/30 × 43/480

43/480 ÷ 5/24 × 6/1

480/5 = 96

24/96 = 1/4

6/1 × 1/4 = 6/4

6/4 = 1 2/4 = 1 1/2 Ans

Continued

Multiply 4/17 by 5/23

4/17 × 5/23 = 20/454 Answer

Multiply 1/3 of 5 by 3/4 of 2/3

1/3 of 5/1 = 5/3

3/4 of 2/3 = 6/12 = 1/2

5/3 × 1/2 = 5/6

5/1 × 6/5 = 30/5 = 6

Answer

Division of Vulgar Fractions

Divide 1/3 of 17 by 2/3 of 1/2

1/3 of 17/1 = 17/3

2/3 of 1/2 = 2/6 = 1/3

17/3 ÷ 1/3 = 17/3 × 3/1 = 51/3 = 17

Answer

Continued

Divide 5/7 by 3/5

5/7 ÷ 3/5 = 25/21 = 1 4/21 Answer

Divide 12 1/5 by 1 1/3

12 1/5 ÷ 1 1/3 = 61/5 ÷ 4/3 = 61/5 × 3/4 = 183/20 = 9 3/20 Answer

---

Divide 5 1/8 by 3 3/4

5 1/8 ÷ 3 3/4 = 41/8 ÷ 15/4 = 41/8 × 4/15 = 41/30 = 1 11/30 Answer

---

Divide 7 by 5/8

7 ÷ 5/8 = 7/1 × 8/5 = 56/5 = 11 1/5 Answer

Divide 4 204/6 by 7/8

4 204/6 ÷ 7/8 = 25225/6 × 8/7 = 201800/42 = 4804/21 = 228 16/21 Answer

---

Divide 4 by 5/8

4 ÷ 5/8 = 4/1 × 8/5 = 32/5 = 6 2/5 Answer

52

Addition of Decimal Fractions

Examples

Find the sum of 19,073 + 2,3597 + 223 + .019758 1

+ 3498.1 + 12.358

19,073
2,3597
223 .019758
3498.1
12,358
3754.91045 81 The sum required

Required the sum of 429 + 21.37 + 355.003 + .07

+.37

429
21.37
355.003
.07
.7
804.143 The sum required

Subtraction of Decimal Fractions

Examples

From 171.195 take 125.9176

171.195
125.9176
45.2774 Answer

From 219.1384 take 195.91

219.1384
195.91
23.2284 Answer

Multiplication of Decimals.

Examples.

Multiply ,02345 by ,00163

```
 02345
 00163
 07035
 14070
 02345
,0003822235 Ans.
```

Multiply 25,238 by 12,17

```
 25,238
 12,17
176,466
252,38
 5049,6
25238
-------
307,14546 Ans.
```

It is required to multiply 56,75349164 by ,3769284
and to retain only five decimals figures in the product

```
                  56,75349164
                   ,3769284
                  ----------
                  40279932 8
                  5069832
                  814244
                  09496
                  4412
                  348
                  80
                  ----------
30,514943         21,38048
```

Division of Decimal Fractions

Examples

21/.19 84 1075 (.0005 38 089
1075
834
639
1791
1752
1907
1752
1555
153.
22

3919/.38000 00 (.102178
3919
8100
7838
6620
3919
27010
23533
29770
29552
18

733/.5739 (.43.1353
532
417
399
180
133
470
399
710
665
450
399
51

72/.918 .217 (12.753 Answer
72
198
144
542
504
381
360
217
216
1

379/.00593 94 (.00156
379
2147
1895
2524
2274
250

Continued

99.5678) 4.6789875(04699931 quotient
3 982712
99567) 696271
5 97402
99565) 98869
8964
9965) 9265
8955
99) 310
297
9) 13
9
4 Remainder

Reduction of Decimals

Decimals

Reduce 1/4 to a decimal

4) 1.0 (.25 Answer

Reduce 3/4 5/8 and 2/5 to decimals

Ans
4/3 (.375 4/5 (.25 Ans
3/2 (.66 Ans

Reduce 1/4 1/2 3/4 1/3 4/5 5/6 and 7/8 to decimals

1 1 3 1 4 5 7
4 2 4 3 5 6 8

4) 1.0 (.2 5
8
20
20

2) 1.0 (.5
10

4) 3.0 (.75
28
20
20

3) 1.0 (.333 +
9
10
9
1

5) 4.0 (.8
40

8) 5.0 (.625
48
20
16
40
40

4) 1.00 (.875
64
60
56
40
40

Answers .25 .5 .75 .333 + .8 .666 + .875

Case 27th

Compendium

Reduce 17 ℔ 4 ʒ 3/4 to the Decimal of a pound

4	3.
12	4. 75
20	17. 729166, &c
	.88541 55

Reduce 1. 2. 3. 4 and 20 on the 19 shillings to Decimals

20/1.00(.5 / 20/20/19) 20/3.00 (.15 / 20/4.00 (.2 / 20/5.00 (.25

20/60(.3 / 20/9.00/.35 / 20/8.0/.4 / 20/9.00/.45 / 20/10.0/.5

20/11.0/.55 / 20/12.0/.6 / 20/13.0/.65 / 20/14.0/.7

20/15.00/.75 / 20/16.0/.8 / 20/17.0/.85 / 20/18.0/.9

20/19.0/.95 Answer

Reduce 1234 &c to 11 pence to the Decimal of a shilling

12/1.0/.83 / 12/2 ..1666 / 12/3 ..25 / 12/4 ..333

12/5 ..4166 / 12/6 ..5 / 12/7 ..583 / 12/8 ..666

12/9 ..75 / 12/10 ..833 / 12/11 ..9166 Answers

Reduce 13 ℔ 5 ʒ 1/2 to the decimal of a £

4	2
12	5. 5
20	13. 458
	.6729 Answer

Continued

Reduce 13 pwt 9 grains to the decimal of a the troy

24	9
20	13, 375
12	10, 66875

£ 8 9025 Ans

Case 3rd

Examples

Find the decimal of 13 6 9¾ by inspection

2/13(6/12 — 9¾ — 39

£, 4
39
2
£ 91 decimal required

Find by inspection the decimal expression of 11 5 3/4 and 17 7 8½

2/11 9 3/4 — 13 — 1 — 914 Answer

2/17 8½ — 4 1/2 — 33 — Answer

5 — 5 — 33 — 2 — 55 Answer

Case 4th

Examples

Find the value of £.93964 of a pound

20

14/.93960

12

9/.71520

4

20.92880

Ans 14 Shillings 9 1/2

What is the value of £679 of a shilling

679

2

1358

679

Ans £.148 ℔

What is the value of £.84697 of a degree ℃

99½

76821

£08134 — 1

£.84795

8

Answer £8 Miles

4760

40

3 Furlongs

3704005½

35 Rods 7 inches

2000

0200

2 Barleycorns .17600

2200

3

6600

12

3/9200

3

2/7600

Class 5th

Lesson 16

Find the value of £.976 by inspection

4 shillings
2
14
1 d
17 = ¼ Answer

976
4
4/126 farthings
6 − 2
6 = ½

Value the following decimals by inspection and find
their sum Viz £.765 ... £.537 ... £.916 .. £.24 .. £.5
£.25 .. £.09 £.008

5 5½ 3¾ 3¾
4/35 (8¾
10

9 16½
4/15
3¾

74 40
2 2
14 4/34
9 = 2

9/2
18

5/2
10

2 5/2 5/0
4
1/5

50

9/2
4/18
9 = 2

09
4½

008
4/8
2

£.8 .. 16 .. 6 = 0

Rule of Three in Vulgar Fractions

Common Rules

If 5/8 of a yard cost 3/4 of a pound what will 9/15 of an English cost

5 4 1 5
8 1 5 — 4 — 20 1
5 — 20 40 2
40

2 5 4 9
1 7 15 — 5 — 45
7 — 2
105 — 90
20
105 | 1800 (17
105
750
735
15
12
30
15
105 | 180 (1
105
75
4
105 | 300 (2
210
90
105

Ans 17 9/105 = 1 1/2 90/105

If 3/5 of a yd cost 2 3/4 what will 40 1/2 yds come to

5 7 81 — 40 1/2
3 8 2 — 81 — 2
3 — 81
24 — 7
4 8 — 567
5
48 | 2835 (59
240
435
432
3
20
48 | 60 (1
48
12
12
48 | 144 (3
144

Ans 59 4/103

If 70 Bushels of corn cost 12 3/5 £ what is it per Bushel

12 3/4
5
63
5

1 = 63 = 1
70 5 1
5
350 | 63 (0 £
20
340 | 126 (0 (3
105
21
12
357 | 252 (7
245
7
35

Ans 30 7/35

If 7/16 of a ship cost £ 51 what one 3/32 of her worth

16 51 3
7 1 32 — 7 — 224 | 2448 (10
224
2048
20
224 | 4160 (18
224
1920
1792
128
12
224 | 1536 (6 | 224 | 1764 (3
1344 — 672
192 — 96

192
4
768

Ans £10 14s 6 3/4 = 96/224

Continued

If 3 5/4 lbs cost what will 9 2/3 lbs come to

3 5/4
4
20
5
4

9 2/3
3
29
3

1 = 29 = 29
12 = 4 = 3
4
496
3
2684

29
23
261
58
54 1
4 20
2684 | 1654 20 (6
1619
692
12
1384
692
2684 | 5304 | 3
4064
240
224 | 6 | 30 5
336 56

Answer 96 3 5/56

A person having
4/5 of a vessel sells
2/3 of it containing 319
what is the whole vessel worth at 5

4/5 of 2/3 of 1/2
4/5 of 2/3 of 1/2
4/15 of 1/2
4/30

15 319 1 319
3 1 1 15
1595
319 | 595 (598
40
78
22
64
1
20
8 | 20 (2
16
4
12
8 | 48 (6
48

Answer 598 2 9/60

72

Continued

A merchant sold 3½ pieces of cloth each containing 12⅔ yards at 9½ shillings per yard what did the whole Amount to

5 1 122
2 2 33
11 33
2 3
1
6

38
11
38
38
2/418 209
6 3

9 — 12 12
1 1 2
108 ½
2
217
2

1 217 209
1 2 3
3
6

209
217
426
209
418
453 53(75+8(629(31+
42 52
33 24
30 11
33 108
30 100
3
4
4
6/20(3
18
2/2 ⅓
6

20
12
29
20
9∞

Ans 31 £ 9∞ 10 3/4
1/3

A merchant makes insurence upon A vessel and cargo valued at £ 9750 16∞ at 1½ guineas per cent what does the premium Amount to

9750 — 16
20
97016
20
434
20

Guin∞
15 — 14
28
124
31
434
28

100
20
2000
20
20 97016 434
2000 20 20
20
40000
20
800000

97016
434
3000064
225048
300064
3255694 4
20

Continued

Decimal

Rule of Three in

Compound

If one ounce of silver
6 s 8 d will buy a
piece of Cloth that
weighs 1 lb 17 oz 13 pr
how much shall 3 oz 17 pr
cost

1 = £ — s — l — d — f
20 12 12
20 80 19
24 20
80 390
40 24
480 1560 (3 1536 = 10
480 1248 (2 1 24
1600 0 96
5 24 8 104
96
8

Ans £3 12 s 5 d ½

Answer £6 6s 10d 1 s

Jan^y 7^th 1809

Duodecimals

Examples

Multiply 9 ft 8' 6" by 7 ft 9' 3"

9 = 8 = 6
9 = 9 = 3
67 = 11 = 6
9 = 3 = 4 = 6
2 - 5 - 1 = 6
75 = 5 = 9 = 7 = 6

How many square feet in a board 17 feet 7 inches long & 1 foot 3 inches wide

4 9
17 = 7
1 = 5
17 = 9
9 = 3 = 11
24 = 10 = 11

Ans 24 = 10 = 11

Suppose a board need to measure 9 ft long 4 ft wide 4 ft high how many square feet

9
4
32
4
16/128(8 feet Ans
128

Suppose a board need to measure 8 feet long 3½ feet wide 2½ high

8 = 0
3 = 6
24 = 0
4 - 0 = 0
28 - 0 = 0
2 - 6
56 - 0 = 0
14 - 0 = 0 = 0
70 = 0 = 0 = 0

16/70(4
64
6
16/16 4

Answer 4 feet 8/12

Continued

Purchase a board 9 inch to measure
8½ feet in length 4 feet wide 5½ high
how many square feet & inches what

8½ = 6
4 = 0

34 = 0
5 = 6

170 = 0
17 = 0 = 0

1870 = 0 = 0

cost at 8½ per inch

128 - 125 = 1 8½ in

125
93 5
3 17 4
1 8½

128 | 2 3 3 9 5 (18½ 2
128
1 0 5 7
1 0 2 4
3 3 5
2 5 6
128 | 7 9 0 (6
7 6 8
2 2 11
2 | 1 2 8 | 6 4

Answer

8½ = 82 = 6

Practice

Example

What is the value of 468 yards at 2/9½

Per yard

£
½ | 4 6 8 = 10
5 8½ = 10
5 = 17
0 = 9 - 9
£ 6 4 = 16 = 7

2 = 6
3 = 10/10
¼ = 2/12

4 | 1 5 3 yds at 1/4 per yard
12 | 4 3 8 - 1
20 | 3 6 = 6
£ 1 = 16

Answer £1 = 16 = 6 7/12

Continued

2 | 1953 at ½ per yd
12 | 976 — 1
20 | 713
£3 — 13 — ¼

1953 at ¾ per yd
20 | 1019 = 6 = 3
£ 3 — 9 = 6 = 3 Ans

12 | 1953 at 1d per yd
146 = 1
£ 1 = 6 — 1 Ans

4 | 1953 at 1¼ per yd
4 | 488 = 1
12 | 121. 9 = 1 — 1
20 | 18 (2 = 9
£9 = 2 — 9 = 1 Ans

Case 2nd

Examples

What is the value of 3993 lbs at ¼ per yard

4 | 3993
12 | 943 = 3
20 | 719 —
£3 — 19 — 0¾ Answer

Case 4th

Examples

What is the value of 591¼ yards at 1/2 2d per yd

2 | 591 = 3
98 — 2 = 2
20 | 6819 = 9 — 2
434 = 9 = 9. ½

Answer £34 7s 9½d

Case 2nd

Examples

What 4897½ yds come to at 5d per yd

5 | 4897 = 6
12 | 1632 = 8
40 — 9 = 2
20 | 2013 = 1 = 2
£1 = 3 = 1 = 2 Ans

Simple Interest

Examples

Required the Interest of 700 Dollars for 4 years at 6 per cent per year

700
4
2800
6
16800

$ 168=00 Ans

Required the Interest of $375 for 5 years 4 months at 5 per cent

$ 375
5
3/3675
5 1/3
18375
1225
19600

$ 196 Answer

Required the Interest of 3520 Dollars for 2½ years at 5¼ per cent

Dol
4/3520
5¼
17600
880
2/18480
2½
36960
924
46200

$ 462=00 Answer

179

Continued

Required the Interest of £720 for 10 weeks at 5½ per cent

720 / 5½ = 3600 + 36 = 3960

Weeks Dol Sh Weeks
52 = 39 = 60 = 10
10
52 | 396-00 (7 61
364
320
312
080
52
5 | 280 (5
260
20

Answer £7-61-5

£674 Dollars 94 cents from Jan. 4th 1795 to May 19th 1796 at 6 per cent Per year

Yr Mos Days
1796 = 4 = 19
1794 = 0 — 4
1 = 4 = 15

£674 = 94
6
12=3 | 4044 = 44 One year
1349 — 44 Int 4 months
2 | 337 = 33 Int. one month
168 = 64 ½ month
55 66 = 60 £55 = 66 = 6

Int 674 = 94 Half the months
8¼
3397 = 92
168 = 64
55 | 66 = 60 £55 = 66 = 6 Answer

Required the Interest of 349 £ Dollars from April 4th 1794 to November 24th 1795 at 6 per cent

1796 = 10 = 24
1793 = 3 — 4
3 7 = 20

£ 349 50 2/3
349 = 50
6990 = 0
20 | 6990 = 00
2 9 3 =

Continued

What is the Interest of 49¼ Dollars from March 16 th 1792 to October 25 th 1798 at 7 per cent per year

£ 49 = 25
7
2 | 344 = 75
6
2068 = 50
Days 6 | 172 - 37
6 ⅓ | 28 = 72
2 ---- 5 = 74
2 = 42
22|78 = 20

1792 = 9 = 25
1798 = 2 = 16
6 = 7 = 9

Answer £22 = 78 = 2

Required the Interest of 50 Dollars from Dec 22 nd 1803 to Nov 12 th 1804 at 6 per cent

1804 = 10 - 12
1802 - 11 - 22
1 = 10 = 20

3|50
11⅓
50
50
16
5|16 6

Answer £5 = 66

Required the Interest of 1000 Dollars for 5 Days at 6 per cent

6|2|1000
500
£8 5 cents the Answer

Required the Interest of £150 = 25 for 25 Days at 6 per cent

Days
5|25 5 ⅚ is the fraction of 25 Days
30 6

£ 2|150 - 25
75 = 12 5/6
6|375 = 60
£2 = 60

Required the Interest of 20 Dollars for 15 Days

£
2|20
2|10
½
5 cents the Answer

15|15 1 ½ is the fraction
30 2
of 15 Days

Continued

Required the Interest of 50½ Dollars for 10 days at 6 per cent ⅌ year

2 | 50 = 50
5 | 25 = 25
1/3
8 = 4⅓

⅓ is the fraction of 10 Days

4 cents 4 mills

Required the Interest of 350 Dollars for 20 Days at 6 per cent

2 | 350
175
2

3 | 350
7/3
1166⅔

Or 350 Dollars for 365 = 21 = 20 Days

6
2100

20
365 | 420 (1
365
365 | 5500 (15
365
1850
1825
25

Ans $1..15

Or 2 | 350
2 | 175
3 | 87-
29
115

Answer $1..15

Required the Interest of 500 Dollars for 10 months 12 Days at 6 per cent

$
500
6
2 | 3000
2 | 1500
3 | -750
3 | 250
3 | 83 = 33
1 = .66
$ | 25 | 99 = 99 Answer

Or by half the number of months

5 | 500 ½
5 ⅕
2500
100
2600

10 months 12 days.

5 ⅕ fract

Required the Interest of 20 Dollars 2 months at 6 per cent

20 cents the Answer

Continued

Required the Interest of 1000 Dollars for 4 months at 6 per cent

$$\begin{array}{r} \$ \\ 1000 \\ \hline 4000 \end{array} \quad \begin{array}{l} 4 \\ \hline \end{array} \quad \text{Answer } \$40=00$$

A Note was given December 8th 1804 for 50 Dollars with Interest until paid there were endorsments on it as follows Jan'y 4th 1805 25 Dollars March 4th 1805 10 Dollars April 8th received in full payment

Dec 1804 — 0 — 4
Jan'y 1803 = 11 — 8
= 0 = 26

$$\begin{array}{r} 2/10 \\ \hline 25 \\ \hline 5/6 \\ \hline 5/125 \\ \hline 120 = 8 \end{array}$$

5/6 Days
5/6 Is the fraction of 25

March 1804 = 2 — 4
1804 — 0 — 4
2 = 0

1804 = 2 — 4
1804 — 2 4
1 = 4

$$\begin{array}{l} \$ \text{ Int Months} \\ 50 - 00 - 0 \\ 00 - 20 - 8 \\ \hline 50 = 20 = 8 \\ 25 - 00 - 0 \\ \hline 2/25 = 20 \ 8 \\ \hline 12 - 60 - 4 \\ \hline 25/\ 20 - 8 \end{array} \quad \begin{array}{l} \text{2} \\ \text{Int months} \\ \text{for 2} \end{array}$$

$$\begin{array}{r} \$\ 25 = 20 - 8 \\ 25 - 2 \\ \hline 25 = 46 = 0 \\ 10 - 000 \\ \hline 2/15 = 46 = 0 \\ \hline 3/\ 3 = 23 = 0 \\ 1 - 1\ 0 = 4 \\ \hline 8 = 8\ 34 \end{array}$$

$$\begin{array}{r} 15 = 46 \\ 8 - 08 = 8 \\ \hline 15\ 54\ 8 \end{array}$$

Note

Remainder on the

Continued

Subscribe A note given Jan. 1 1803 for 320 Dollars and Interest at 6 per cent and 50 Dollars were endorsed the first of July following and 150 Dollars the first of January 1805 what is due on said note the first of April 1807

1806 = 3 − 1
1802 − 6 − 1
3 = 9 = 0

1806 = 3 − 1
1802 − 0 − 1
4 = 3 = 0

$ 320
6
4/1920
4
7680
480
$1160

$ to
320
81 = 60
401 = 60

1806 = 3 − 1
1804 − 0 − 1
2 = 3 = 0

$ 50
6
2/300
3
900
2/150
75
11025

$
50
11 = 25 Endorsed
61 = 25

Endorsement
61 = 25 Int.
170 = 25
231 = 50

$
150
6
4/900
2
1800
225
2025

$ cents
150 − 00
20 − 25
170 = 25

401 = 60 Amount of the
231 = 50 the sum of the
170 = 10 endorsements with interest

note with Interest

$
Answer 170 = 10 cents

Continued

In Johnson A note given June 1st 1804 for
500 Dollars Interest at 6 per cent 250 Dollars
were endorsed on it June 16th 1803
and 200 Dollars the 14th June 1803
and the 14th April following 4 25
how much remains due on said note
the 14th day following

May 1804 = 4 = 14
Jan. 1803 - 0 - 1
1 = 4 = 13

1804 = 4 = 14
1803 5 - 16
= 10 = 28

1804 = 4 = 14
1804 0 - 14
4 = 10

1804 = 4 - 14
1804 3 - 14
1 =
1804 = 4 = 14

2/28
14
28 -
00 - 14
28 = 14

2/500
3/3000
1000
3/250
83
1
3
4/104

500
41 = 4
541 = 4

4
2/250
5:12
1250
125
13,75

250
13 = 75
263 = 75

4 4
263 = 75
204 = 00
28 = 14
495 = 89

endorsed
with Interest

541 = 04
495 = 89
45 = 15

4
200
2
400

200
4
204

Answer 45 & 15 cents

Continued

Inspham Anote given Jan^{y} 12th 1809 for $ 500 Dollars ... Demand with Interest from the date $ 400 ... was endorsed on it Jan^{y} 12 1808 $ 100 Jan^{y} 12th 1809 How much was the due

Jan^{y} 1808 — 0 — 12
1806 — 2 — 12
2 — 0 — 60

$ 500
60
560 Amount of the pri

$ 500
100
60
60
6000

Jan^{y} 1808 — 0 — 12
1807 — 0 — 12
1 — 0 — 00

400
24 Jan^{y}
524

524
24
36 Answer

$ 36 remains due

For Value received I promised to pay John Hooker 50 Dollars on Demand with Interest from the date Jan^{y} 1st 1808 received full payment the April 19 following required the Interest

April 1807 — 3 — 19
1807 — 0 — 1
3 — 18

2/50
1½
50
25
12 = 5
2 = 5
18 00

Answer 80 cents

Brimfield March 10th 1804

For value received of James Brown I promise to pay him or order Fifty Dollars ~~Sixty~~ Days after date with Interest

Required the Interest

365 = 1 — 50 = 60

365 / 9000 (24
730
1700
1460
365 / 2400 (6
2190

Ans 24 cents

Continued

Required the Interest of 500 Dollars for 4½ Months at 6 per cent

£ 1/500
2¼
1000
125
£ 11/25

Ans £11=25 cents

Required the Interest of 3060 Dollars for 6 Months 10 Days at 6 per cent

£ 6/3060
3/6
15180
43=3
£ 160(23=3

£ 160 23=3 Answer

£ 2/3060
6
2/30360
15140
3) 2530
0£ 43=3
160(23=3

£ Stg Mills Cts Answer 160=23=3

What is the Interest of 500 Dollars for 1½ month at 6 per cent

£
2/500
250
225
125
3)75

Answer £3=75

What is the Interest of 1000 Dollars for 7 at 3¾ per cent

£
2/1000
3¾
3000
500
2/ 250
2/3750
4¾
15000
1875
2/ 937=5
178/15

Answer £178

Discount

Examples

What must be discounted for the ready payment of 100 Dollars due 2 years at 6 per cent per year

100 6 6 00 2 12 00

100 6 2 112 = 112 = 100

112) 12 00 (10 7 1 4
112
80 00
784
1160
1120
480
448
32

1 is to 100 as 100 is to 100 = 1 / 1 = 1

What is the present worth of 642 Dollars due 18 months hence at 9 per cent per annum

642 00
642 = 641

642
7
4494
2242
6941

909 41 = 641 = 642

642
1284
2568
4046
4494
4527722 (61
4256 16
271262
20941
21000 (00 = 4
21376 4
1284
3726

1 is to 1 as 1 is to 1

642 - 00
61 - 00 - 4
580 = 99 - 6

1 is to 1 as 1 is to 1

1 is to 580 as 99 is to 6

Barter

Examples

How much wheat must be given at $1.10 per bushel in barter for 66 bushels of rye at 85 cents per bushel

66
85
330
528
5610(51
510
45
111
105
6
5)24(4
20
4

Ans. 51 bushels, 4/5

How much flour at 12 cents per lb for 2½ yds of broadcloth at $4 dollars per yd

4
2½
10
2)40
20

12/1000(83⅓ lb Ans.
96
40
36
4

Required the quantity of flour at 8 cents a lb that must be given in barter for 12 lb of indigo at $2.50 cents per lb

2.50
12
500
30.00

8/3000(375 lb Ans.
24
60
56
40
40

Loss and gain

Examples

If I buy serge at 5/- per yard and sell it again at 5/8 per yd what do I gain per cent or is buying out 100£ to £ gain or loss per cent

5 — 8
5 — 0
0 — 8 gain per yd

5 — 8 — 100
20
2000
8
5/16000(3200|266(13
15 24 20
10 80 66
10 72 60
8 6
2

Ans. 13 £ 6 8/-

---

5 — 8 — 8 — 100
20
2000
12
24000
8
68/192000(2823(235|11
136 24 20
560 42 35
544 36 20
160 63 15
136 60
240 3
204
36
4
68/144(2
136
8
68

Ans. £11=15=-3½

Continued

If I buy 4 cwt of tobacco for £9-6-8
and sell it again at 1/10 per lb. do I gain
or lose and what per cwt (2 ——

1 = 10
12
22

ft.
1 = 12 — 12
22.
224
224
12/2464 (205 (17
20
5

4 cwt
10 — 5 — 4
9 — 6 — 8
18 = 8

20
186
12
360
186
2240

12
44
224

20
2000
12
24000
224
96
48
48
224/537600 (2400 (200
448
896
896

20/2400 (10 £ wt

Continued Loss and Gain

A draper bought 60 yds of cloth at 28d per yd and 38 yds of do at 14d per yd and sold them one with another at 26d per yd did he gain or loss and what per cent

yd d yd
1 — 28 — 60
60
20/1680
84

yd d yd
1 = 14 — 38
14
152
38
20/532
26 — 12

26 = 12
84 — 00
110 = 12

yds
60
38
98 yds —

yd d
1 — 26 — 98
26
588
196
20/2548
127 = 8

£ s
127 — 8
110 — 12
16 = 16 Answer

£ s £ s £
110 — 12 — 16 — 16 = 100
20 20 20
2212 336 2000

2212/672000(303(15 £
6636 20
8400 103
6636 100
1764 3
12
3528
1764
2212/21168(9
19908
1260
4
2212/5040(2
4424
616

Ans 15 £ 3 0 9½

Continued

If 19½ cwt of sugar be sold at £3-2 per cwt and I gain 15 per cent what did it cost per cwt

£ £ s £
100 = 4 - 5 = 100
115 20
85
100
115/8500(73/3
805 60
450 13
345
105
115/1260(10
115
110
4
115/440(3
345
95 19
5/115 23

Answer £3-13-10 or 3 19/23

If both sold at 5/8 per yd he £13-6-8 profit per cent. If that gain is 60 per cent what did it cost per cent

d s £ s
5 - 8 = 100 = 5
12 13 = £-8
60 113 = £-8
20
2260
12
45540
2266
27200
20
6)1632000(272000(2000(100
12
24000
2000
20
00
00

93

Square Root

Examples

Required the square root of 30136960 25

	1 30 13 69 60 25	17360 5 Answer
27	201	
	189	
343	12 36	
	10 29	
3466	20 96 9	
	20 79 6	
34720	17 36 0 25	
	17 36 0 25	

Required the square root of 5755

2	57 55 (23,98	The root required
	4	
43	175	
	129	
469	46 50	
	42 21	
4698	4 29 00	
	3 83 04	
	45 96	Remainder

Required the root of 964 10342656

3	10 34 26 56 (3216	Ans. the root required
	9	
62	1 34	
	1 24	
641	10 26	
	6 41	
6426	3 85 56	
	3 85 56	

Continued

What is the square root of 964, 51923 60241

	. . . . .	
3	964, 51923 60241	(31, 05671 Ans.
	9	
61	64	
	61	
6207	3 51 92	
	3 10 25	
62106	41 67 36	
	37 26 36	
621127	4 41 00 02	
	4 34 78 89	
6211341	62 13 41	
	62 13 41	

What is the square root of .0000316969

	. . . . .	
0	00 00 31 69 69	(00563 Answer
	00	
00	0000	
	0000	
005	31	
	25	
106	669	
	636	
1123	3369	
	3369	

What is the root of 625

	. .	
2	625	(25
	4	
45	225	
	225	

25 the root Required

Of Vulgar Fractions and mixed numbers

Examples

What is the square root of $\frac{144}{1529}$

$$\begin{array}{r|lll} 3 & \frac{144}{1529} & \frac{48}{5043} & \frac{16}{1681} \end{array}$$

$$\begin{array}{r|l} 4 & \frac{16}{16} \\ \hline & \end{array}$$ (4 root of the numerator

$$\begin{array}{r|l} 41 & \frac{1681}{16} \\ & \frac{81}{81} \\ \hline & \end{array}$$ (41 root of the denominator

Therefore $\frac{4}{41}$ is the root of the given fraction.

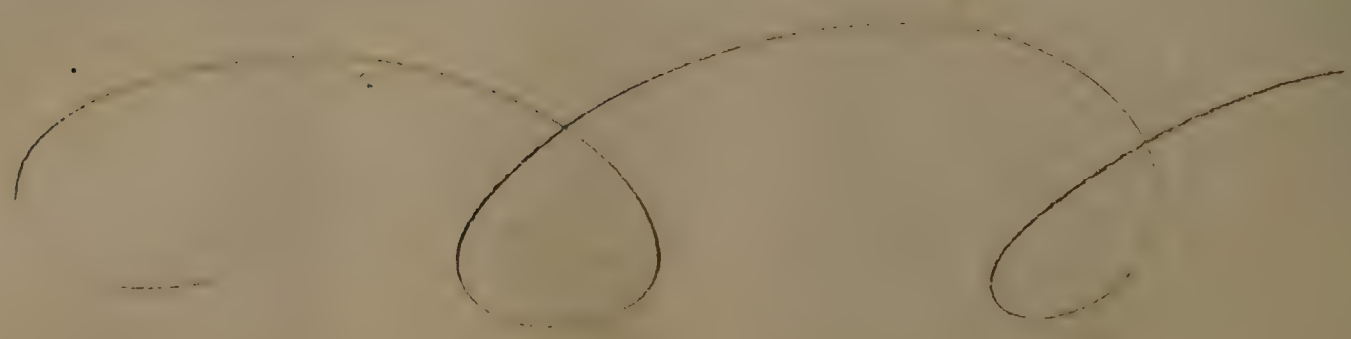
What is the square root of $\frac{1764}{5184}$

$$\begin{array}{r|lll} 6 & \frac{1764}{5184} = \frac{294}{864} = \frac{49}{144} & & \end{array}$$

$$\begin{array}{r|l} 7 & \frac{49}{49} \\ \hline & \end{array}$$ (7 the root

$$\begin{array}{r|l} 12 & \frac{144}{1} \\ & \frac{44}{44} \\ \hline & \end{array}$$ (12

$\frac{7}{12}$ Answer



Continued

What is the square root of 42¼

42 2/4
4
169
4

1/1 69 (13
1
23 | 69
69

2/4 (2

2/13
6½ Answer

Application and use of the Square Root

Problem 1st

Examples

What is the mean proportional between 24 and 96 ?

96
24
384
192
2304

1/23 04 (48 + Answer
16
88 | 704
704

Problem 2nd

Examples

If the area of A circle be 184.125 what is the side of a square equal in area thereto

1 | 184, 12 50 (13, 56 + Answer
1
23 | 84
69
26 | 15 12
13 05
270 | 1 87 50
1 62 36
25 14

Continued

If the area of a triangle be 160 what is the side of a square equal in area thereto

1	160(12,64 + &c. answer
	1
22	60
	44
246	1600
	1476
2524	12400
	10096
	2304

Problem 9.

Examples

A certain General has an army of 5625 men & they have to be placed in rank and file to form them in a square

	7/5625(75
	49
145	725
	725

Problem 4th

Examples

Let 10952 Men be so formed as that the number in rank may be double the file

2 | 10952
5476

7 | 5476 (74 in file
49
576
576

74/2
148 in rank

Problem 5th

Examples

If it be required to place 2016 men so as that the may be 56 in rank and 36 in file and to stand 4 feet distance in rank and as much in file how much ground do they stand on

1-4 = 55
4
220
140
8800
220
30800 feet Answer

56 - 1
55

1-4 = 35
4
140

36 - 1
35

Problem 6th

Examples

Suppose I would set out an orchard of 600 trees so that the length shall be to the breadth as 3 to 2 and the distance of each tree one from the other 7 yards how many trees must it be in length and how many in breadth and how many square yards of ground do they stand on

Ans 3 − 2 − 600

3 | 1200

400

2 | 400 (20 the mean

40 | 400

20 × 3 = 60 − 1

19

2

133

Ans 2 − 3 − 600

3 | 1800

900

3 | 900 (30

60 | 900

00

30 × 2 = 60 − 1

29

2

203

133

609

609

203

26999 Square yds

Problem 7th

Examples

Admit A leaden pipe 3/4 inch diameter will fill A cistern in 3 hours I demand the diameter of another pipe which will fill the same cistern in one hour

Reduce 3/4 to A Decimal

4/3
,75

,75 × ,75
,75
375
375
,5625 = 1 inverse
3
1,5625

1,56 87.5 (129 + Ans
1
22 / 68
44
249 / 2475
2241
234

Problem 8th

Examples

If A pipe whose diameter is 1,5 of an inch fill A cistern in 5 hours in what time will A pipe whose diameter is 2,5 inches fill the same

1,5 × 1,5
1,5
75
15
2,25

3,5 × 3,5
3,5
175
105
12,25

5 hrs 5
2,25 = 5 = 12,25
5
12,25 / 11 25,0 (91
11 02 5
2250
1225
1025

91/60
5460
60
3600

54 minutes 36 seconds Ans.

Problem 31st

Examples

If A pipe 6 inches bore will be 4 hours in running off A certain quantity of water in what time will 3 pipes each 4 inches bore be in discharging double the quantity

$\frac{6}{2} \times 6 = 36$

$3 + 4 \times \frac{4}{4} = \frac{16}{18}$

$36 - 4 = 48$

$48 \overline{)144} (3$
$\underline{144}$
2

6 hours Answer

Two ships sails from the same port one goes due north 45 leagues and the other due west 76 leagues how far are they asunder

45×45
45
225
180
2025

76×76
76
456
532
5776
2025
7801

$7801 (88,32$
64
1401
1344
5700
5289
41100
35324
5776

5
164
1763
17662

Answer 88,32 + leagues

Single Fellowship

Examples

A man died leaving an estate of £148-2-6 but he owed A £21 £9/6 B £72 £19/3 £6 14£ 13/9 and D £26 4£ 19/6 Demand how this estate must be divided among his creditors

21=9=6
72=19-3
114=13-9
264=19=9
474=00=0
20
9480
12
113760

£ s d
113760 = 148-2-6 — 21=9=6
20
2962
12
5950
2962
35550
5154
142200
17775
3555
17775
113760 | 183224 1700 (1610 (134 (6 £
113760
69464
68256
12087
11376
711 00
4
113760 | 2844 00 (2
22752
5688

12 20
12
41
36
50
48
2

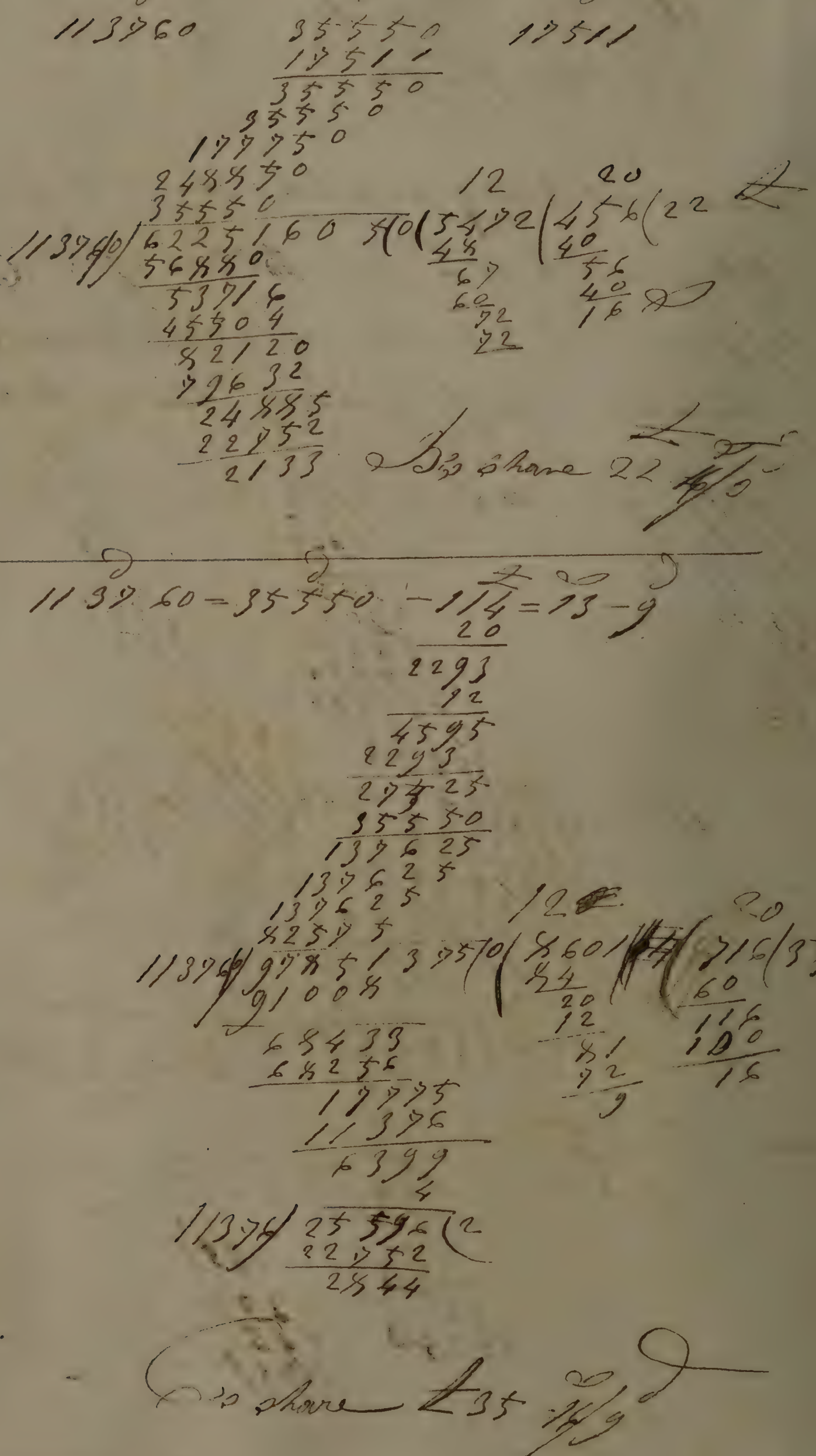
Answer 6£ 14/2½

£ s d
113760 = 148-2-6 = 72=19=3
20
2962
12
5930
2962
35550

20
1459
12
2901
1459
11691

Continued

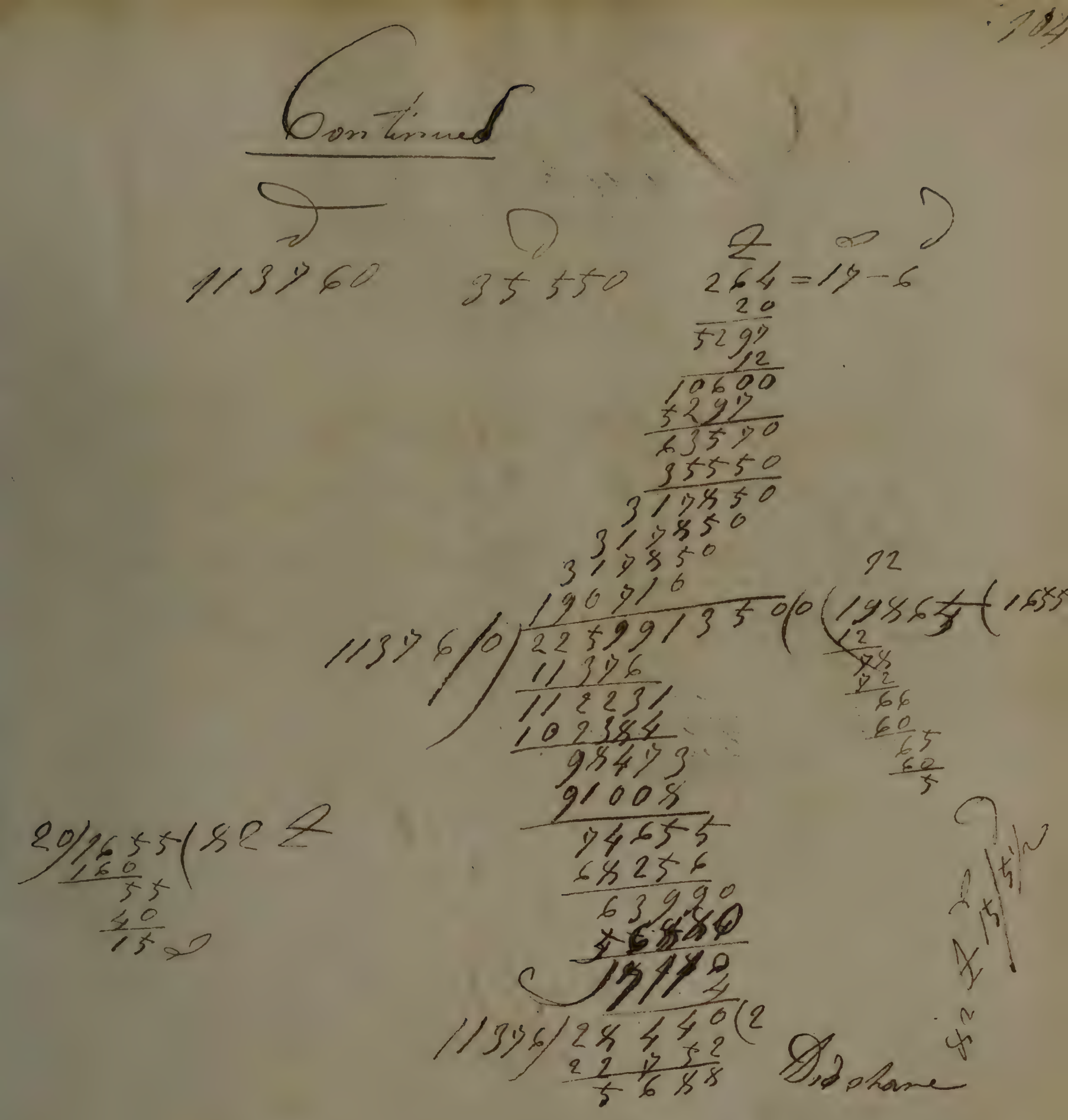
11396 35550 17511



11396 − 35550 − 114 = 73 − 9
20
2293
12
4595
2293
27925
35550
13962 5
13962 5
13962 5
13962 5
42597
11396 97855 13975 70
91008
68433
68256
17775
11396
6399
4
11396 25596 2
22792
2804

Continued

11396 35550 264 = 19 − 6



Did share

Answers A's share — £ 6 - 14 - 2½

B's share — 22 - 16 —

C's share — 35 - 16 - 9

D's share — 82 - 15 - 5½

£ 14 8 = 2 = .5 Answer

Double Fellowship

Examples

Two merchants trade in company A puts in £100 for 4 months & £136 for 3 months but by misfortune they lose £50 how must they share the loss

£ £
100 136
4 3
400 408

£
408 − 50 = 400
50
408 / 20000 (24 £
1616
3840
3232
608
20
408 / 12160 (15 s
408
4080
4040
40
408 / 4800 (0 d
4
408 / 1920 (2 2
1616
304

£ £ £
408 = 50 − 408
50
408 / 20400 (25
1616
4240
4040
200
20
408 / 4000 (4
3232
768
12
15360
9216 (11
408 / 9216
408
1136
816
320
4
408 / 13124 (1
408
504

Answer, A's share of the loss is £24 15s 0d

B's £25 4s 11¼d

Equation of Payments

Examples

Cows 300 Dollars to be paid as follows $50 in 2 months $100 in 5 months $150 in 8 months but it is agreed to make but one payment of the whole Demand when shall it must be

$50 × 2 = 100
100 × 5 = 500
150 × 8 = 1200
300 | 1800 (6 months
1800

$50 × 2 = 100
$100 × 5 = 500
$150 × 8 = 1200
300 | 1800 (6 months
1800

Cows To a certain sum of money which is to be paid one half present one fourth in 4 months and the remainder in 8 months what is the equated time for the whole

Purchase $80

one half 40
1/4 ---- 20
20
80

40 × 4 = 160
20 × 8 = 160
80 | 240 (3
240

Answer 3 Months

May 7th 1809

Single Rule

Examples

A school master being asked how many he had said if I had as many more as I now have 3/4 as many 1/2 as many 1/4 and 1/8 as many I should then have 435 of what number did his school consist

Suppose 80
40
60
40
20
10
290 = 435 = 80

290 | 34890 (120 Answer
29
58
58
0

120
120
90
60
30
15
435 Proof

A person lent his friend a sum of money unknown to receive Interest for the same at 6 per cent per annum simple Interest and at the end of 12 years received for principal and Interest £60 — what was the sum lent

£ £ £
172 − 120 = £60

Suppose £100 — 100 / 12 / 172
600
12
7200

172 | £6000 (£100 Answer
£60
00

Continued

A, B and C joined their stocks and gained £350 of which A took up a certain sum B took up 4 times so much as A & C 6½ times so much as B what share of the gain had each

Suppose A had £20

20
40
640
740 = 350 = 20
20
740 | 7000 | 9 £
666
34
20
74 | 680 | 9 s
666
14
12
28
14
74 | 168 | 2 d
148
20
74 | 80 | 1 s
74
6
74

Answer

A's share £9 = 9 2/74 £

B's do ---- 37 = 18/9 = 6/74

C's do 302 74/0½ 44/74

740 − 350 = 80
80
740 | 28000 | 37 £
222
580
518
62
20
74 | 1240 | 16 s
74
500
444
56
12
74 | 672 | 9 d
666
6
74

£ £ £
740 = 350 = 640
640
14000
2100
74 | 224000 | 3027 £
222
200
148
520
74 | 1040 | 14 s
74
300
296
4
12
74 | 48 | 0 d
4
74 | 192 | 2 s
148
44
74

Continued

A B C and D spent 35 shillings at a meeting and being a little tipped they agreed that A should pay 1/3 B 1/2 C 1/3 D 1/4 ; what did each pay in the above proportion

Suppose £0
40
30
20
15
105 = 35 — 40
3
105 / 1400 (13
105
350
315
35
3
105 / 420 (4
420

As 1 shone 13/4

£ s d
105 = 35 = 30 shone
30
105 / 1050 (10 shillings B. 0
105
0

£ s d
105 = 35 = 20
20
105 / 700 (6
630
70
105 / 840 (8
840

C. 6/8

£ s d
105 = 35 = 15
25
175
35
105 / 525 (5
525
0
140

Answers A 1 13/4
B 1 10/0
C 1 6/8
D 1 5/0

A certain sum of money is to be divided between 5 men in such a manner as that A shall have 1/4 B 1/5 C 1/10 D 1/20 and E the remainder which is 40 £ what is the sum

Suppose £0
20
16
4
4/5

£0
4/5
32 sum

32 — 20 = 40
40
32 / 3200 (100 Answer
32
00

Continued

A person after spending 1/2 and 1/3 of his money has £ 26 2/3 left what had he at first

Suppose 60
30
20
50

subtract 50 from 60
50
10

£ £ £ £
10 = 60 = 26 = 13-4

20
200
12
2400

20
533
12
1070
533
6400

£
26 2/3

2
20
3/40
13=4

60
24/00/384 0/0 0/(160 £ Answer
24
144
144
0

A and B talking of their ages B said his age was once and A half the age of A said his was twice and one tenth the age of both and that the sum of their ages was 93 what was the age of each

Years
Suppose 40
60
210
310 — 40 = 93

40
310/3720/(12 Ans A 12 years.
31
62
62

2/12
6
18 B's Ans

£ 12
£ 18
£ 63 — Proof

12
18
10/30
2
60
3
63 — C's Answer

111

Continued

60
30
15
20
65 — 3 — 60
3
65) 180 (

Fepel has 3 cocks A B and C A can fill it in half an hour B in ¼ of an hour & C in ⅓ of an hour in what time will they all fill it together

Minutes
Suppose 30.
1
2
1½
1½ = 30 = 1/2
2
9
9) 60 (6
54
60
9) 360 (40
360
0

Ans 6 Minutes 40 seconds

A person having Albert this A certain number of Dollars said that ⅓ ¼ ⅕ and ⅙ of them would make 57 pray how many had he

Suppose 120
40
30
24
20
114 = 120 = 57
57
840
600
114) 6840 (60 Answer
684
0

Continued

12
6
3
4
13-3-12
3
13)36(2
26
10
80
13)600(4
52
8

A Gentleman bought a chaise horse and harness for 100 £. the horse cost ¼ more than the harness and the chaise ⅓ more than the horse what was the price of each

£

Suppose 24
30
40
94 = 24 = 100
24
40
20
3)25 £ the harness cost
94)24
188
520
470
520
94)1000(10
94
60
12
94)520(5
478
94)248(2
188
60
94

94 = 30 = 100
100
94)3000(31
282
180
94
86
20
94)1720(18
94
780
752
28
4
94)112(1
94
18

28
12
56
94)336(3
282
54
94)216(2
188
28
94

94 = 40 = 100
100
94)4000(42
376
240
188
52
20
94)1040(11
94
100
94
6
12
94)72(0
94)288(3
282
6
94

1 the horse 31½
2 the chaise 18½
3 the harness 11 = 94

Another Question

A and B having found a purse of money disputed who should have it A said the 1/5 1/10 and 1/20 of it amounted to 35 £ and if B could tell him how much was in it he should have the whole otherwise he should have nothing how much did the purse contain

Ans 1200 £

the 1/5	12
1/10	6
1/20	3
21	= 60 = 55

15
300
60
21 | 2100 (100 £ Answer
21
00

A gentleman divided his fortune among his sons so that the 1st got 1/3 and 1/4 of the portion came to 1050 £ what was the whole estate

Ans 3600 £

1st	1/3
2d	1/4
3d	5/12
	12/12

Ans. £63 then Ans 63 and 63 £
1st 1/3
2d 1/4
3d 5/12
1050 4/5

4/5 of 80
5 | 16

Continued

4 4 4
15 = 113 = 1050 = 16
20 20
300 21016
113
63048
21015
21016
300 / 2374308 (7912
2100
2748
2700
480
300
1808
1800
8
20
300 / 1600
12
300 / 1920 (6
1800
120
4
300 / 480 (1
300
180 30 6 3/5
300 50 10 3/5

1 3/5

4
Answer 7912=0=6

Seven eighths of a certain number exceeds 4/5 by 6 what is that number

Let x = no

40 40
5 / 240 8 / 320
35 32

35
32
3

3 = 40 − 6
6
5 / 240
80 Ans

40 80
3 4 5
8 / 560 5 / 320
70 64
6 and
70
28 x

Continued

A having having a certain sum of money and
$\frac{1}{2}$ $\frac{1}{3}$ and $\frac{1}{4}$ of it being added together
made 13 ℔ what sum had he

Suppose 36
$\frac{1}{2}$ 18
$\frac{1}{3}$ 12
$\frac{1}{4}$ 9
39 = 13 = 36
13
108
36
39) 1404 (12
39
354
354

Double Position

1st

Examples

A lady bought Damask & Linen at 5s per yard
and Linen for at 4s 6d p yd the gown and lining
contained 15 yds and the price of the whole
was 3 £ 10 s how many yds were there of each

Suppose 6 yds of Damask then she must have
9 of lining
$\frac{3}{27}$
$\frac{9}{48}$ 0
27
175
70
5 +

3 = 10
20
70

Suppose 4 Then 11
8 3
32 33
33
65

70
65
5

5 +
4 5 —
20 30
30
10) 50
5 $\frac{5}{10}$

$\frac{5}{5}$
10

Ans 5 yds of Damask
10 yds of Lining

Continued

2nd A and B have the same income A save $\frac{1}{5}$th of his but B by spending 30 £ per annum more than A at the end of 4 years finds himself 40 £ in debt what is their income and what does each spend per Annum

£
Subtrahend 40 | 4 | 40
10
40

40
10
70 — — —
30
100 B — 100 £
80
20
8
160
40
120 + error

£
Subtrahend 120 their 5th is 20
20
140 A spends 140
30
£ 170 B spends
100
10
8
80
40
40
Subtrahend Ans 80 — 120 + error

160 — 40 +
7200 3200
120
19200
3200
80 | 160 00 | 200 £ their income
160
00

120
40
80

£
4 | 200
25

200
25
175 A spends £ 175 and B £ 205
30
205

Left 24 th 1809

111 66

continued position

7.

What number is that being increased by its $\frac{1}{2}\ \frac{1}{4}\ \frac{1}{5}\ \frac{1}{20}$ and $\frac{2}{3}\ \frac{3}{5}\ \frac{7}{8}$ and 7 will make 129 1/4

Suppose 160
80
40
32
7 1/4
7 1/4
2 7 1/4
1 2 9 1/4
200 + error

2 3 3 5 7 1
3 5 8 7
40 3
120

5
3
15
2
30 6

5/120 30 6 1/4
24 4

1/4 7
4 1
9 1
28 1
28
4/22
7 1/4

1/4
4 Divisor

Again suppose 180
90
45
36
9
7 1/4
3 6 7 1/4
1 2 9 1/4
240 + second error

Suppose error
160 — 200 +
180 = 240

16000 6400
200 320
36000 3 4 400
36 000
40/1440(60 Answer
24
0

240
200
40 Divisor

60
30
15
12
3
7 1/4
129 1/4 Proof

CONTINUED

14th A and B laid out equal sums of money in trade A gained a sum equal to ¼ of his stock and B lost £25 Then A's money was double that of B's what did each lay out

	¼	£
Suppose	300	300
	75	225
	375	75
	150	75
Then error	225 +	150

	¼
2nd Suppose	900
	225
	1125

900
225
675
675
1350
1125
225 — error

225
225
450

2nd Position 300 — 225 + error

900 — 225 —

202500	1500	450
67500	600	2700000 | 600 | 6750
	600	22
		00

£600 Answer

15th A Labourer was hired upon this condition that every day he worked he should receive 3/4 and for every day he was idle should forfeit ¼ & at the expiration of the time he received £3/15 how many days did he work & how many were he idle

Suppose 20 at 3-4 will be 40 Error

1-4	80	3-4
12	20	12
20	40	40
	20	
	80	
	80	
	00	

20
800

40

3=15

20
175
12
0.00 — error

Continued Division

Again Suppose 40 — 40 — 60
40 — 40
1600 — 20 inches
400 — 20
1200 — 400
400
800 — 300 + over

20 × 900 —
40 × 300 +
36000 — 6000 — 900
6000 — 300
12/00 | 420(00(35 — 1200
36
60
60 — Answer 35 days the work'd — 60 — 35 — Ans 25

6th

A Gentleman has two horses of considerable value & a carriage worth 100 £ now if the first horse be disagreed in it he and the carriage to ye fair will be triple the value of the second but if the second be put in they will be 7 times the value of the first: what is the value of each horse

The first & the second is
Ans 32 — 100 — 3 | 132 — 44 — nor 44 £ — 100 — 144 — 33⅓ — 224 — 144 — 40 — 5

Ans 44 — 100 — 3 | 144 — 48 — 48 — 100 — 144 — 44⅔ — 304 — 144 — 160 — over

Continued Position

sub	error
32	40
44	160

320
320
3520

1920
32
5120
3520
160 | 0 | 0 | 20 the price of the 1st horse
16
0

20
100
5 | 120
40

£40 the price of the 2nd

7th There is a fish whose head is 10 feet long his tail is as long as his head & half the length of his body & his body is as long as his head & tail what is the whole length of the fish

Suppose the body to be 20 feet long

2nd Sub. 30 — 10
25
35
30
5 — error

10
20
30
20
10 — error

sub	error
20	10
30	5
300 = 100	

300
100
5 | 200 (40 the body 40 feet long
20
0

10
30
40 feet whole length

Continued Fraction

471.

What number is that which being increased by its ½ its ¼ & 1 more will be doubled

Suppose 8
4
2
1

19
16

3

Sup. Error
8 = 3
16 = 1

---

48 8
8
2 | 40 (20 Answer
4

0

Suppose 16
8
4
1

33
32
---
1 Error

$\frac{3}{2}$ Divisor

---

472. A man having driven his cattle to market received for them all £80. being paid at the rate of £1 per cow £6 for £1=10/pr. cow there were as many oxen as cows & 4 times as many calves as cows & how many were there of each sort

Suppose 6 cows
4

24
36
36

96
80

16

6 oxen 24 calves at £1=0
6 30
---
36 20 | 720
36
---
30 Shillings

and Suppose 12
4

48
72
72

192
40
---
112 + one

12 48
6 30
---
72 | 1440
72

Sup. Trial
6 — 16
12 — 112
---
32 672
16 192
---
192 480
480

0

112
16

96

96 | 480 (5 cows 5 Oxen 5 20 calves Answ
480

0

5
4

20

Position Continued

10th A B & C built a Ship which cost them £1000 of which A purit A certain sum B purit £100 more than A & C £100 more than both having finished her they fitt her for sea with a cargo worth twice the value of the ship the outfits and charges of the voyage amounted to 1/8 of the ship upon their return of which they purit their clear gain to be 2/3 of 3/5 of the voyage charges & expences please to inform me what the ship cost them severally & what share each hath in her & what upon the final adjustment of their accounts they first severally gained &

Suppose A purit £ 100
B 200
C = 400
700

2d Suppose
A purit £ 200
B 300
C 600
1100
1000
100 + Error

Suppositio Error
100 300 —
200 100 +
60000
10000 10000
400 / 700(00(175
4
30
24
20
20

1000
300
300 — Error

Suppositio Error
100 300 —

Divisor
300
100
400

A more than 175 B 100
175
100
275

C 100 more than both
175
275
450
300
550

C 550 £ 550 / 1000 Profit

Partners Continued

£ This £
1000 = 1 = 175
1
1000 / 175 (0

£ | 175 | 35 | 7 | s
1000 | 200 | 40

Answer A owns 7/40

£ | 275 | 55 | 11 | s
1000 | 200 | 40

B owns 11/40

£ | 550 | 55 | 11 | s
10 / 1000 | 100 | 20

C owns 11/20

They gained 2/5 of 3/5 — 2/3 of 3/5 = 2/5 — 3/4 of 6/15 = 2/5 — 2/5 = 3125/1

1/5 | 1000 / 2000 / 125 = 3125

To their gain is 2/5 of 3125

3125
5 | 6250 (2
1250

A owns 7/40 to 40 = 1250 = 7 — This £ This s
7
40 / 8750
£ 218 = 15

A owns 7/40 which cost him £175 & his share of the gain was £218 = 15

B owns 11/40 to 40 = 1250 = 11 — This £ This s
11
1250
1250
40 / 13750 (0
343 = 15

B owns 11/40 which cost him £275 & his gain was £343 = 15

C owns 11/20 to 20 = 1250 = 11 — This £ This s
1250
1250
20 / 13750 (0
687 = 10

C owns 11/20 which cost him £550
& his gain was £687 = 10

Position Continued

11th: A B & C discourseing of their money says A I have 6 Dollars more than B and say C I have 7 Doll more than B well says A the sum of our money is 100 Doll how much hath each one

Subt hath 6 Dolls

A :: 6 — 100 — 37 — 63 — error
B :: 12 — 37
C :: 19 — 37

2d Subt 20 — 100 — 79 — 21 — error
26 — 79
33
79

Subt error

6 = 63 —
20 = 21 —

1260 — 126 — 42 — 63 — 27 A money
126 — 21 — 6
42 — 33 B's money
1134 (27 — 7
84 — 40 C's
294
294

12th: A man having been to market with hogs & geese received for them all £190 for hogs he received £4 for every hog 75 units & for every geese 25 there were for every 2 hogs 3 geese what was the number of each sort

Subt for 12 — 75 — 60 — 84 — 900 — 9 — 9 — 96 — 114 — 190 — 114 — 76 —
2 — 75 — 150 — 168 — 1900 — 24 — 4 — 96
36 geese — 25 — 180 — 72 — 900

Subt for 16 hogs — 75 — 80 — 112 — 1200 — 32 = 4 — 4 — 128 — 240 — 96 — 1200 — 12 — 12 — 128 — 152 — 190 — 152 — 38 —

Division continued

20 / 75 / 100 / 140 / 1500

60 / 25 / 500 / 120 / 1700 — 40 / 4 / 160

hogs 20 = 15
hogs 40 = 160
geese 60 — 15
$190 Proof

and

Duck = 12 = 76
16 = 38

456 / 96 / 76 / 96 / 1216 / 456 / 456

38 | 760 (20 Answer 20 hogs
76
0

76 / 38 / 38

20 / 2 / 40 hogs / 3 / 120 geese

20 × 3 / 3 / 60 geese

A man had one hundred animals to be sold at instock he will give 5 ℔ for ewes & 1 for sheep & 10 ℔ for turkeys & wants to 100 in the whole Query how many of each sort can be purchase with his money

Suppose 17 ewes Then he may have 80 turkeys
5 / 85 / 4 / 9 / 92 — 100 / 92 / 8 = error

3 sheep

Suppose 16 ewes 80 turkeys 4 sheep
5 / 80 / 4 / 4 / 88 — 100 / 88 / 12 — error

Suppose error

17 — 8 — 12
16 — 12 — 8
128 — 34 — 4 Error

17 / 204 / 28 / 4 | 76 (19 Answer 19 ewes
4 / 36 / 36

9 — R

Continued Solution

then subtract 19 from 100 — 81 sheep & their keys to buy

19 / 5 / 95 — 100 / 95 / 5

be bought for 5 ℔

Out 21 sheep — 21/3 turkeys

2 1/3 / 5 / 19+

and subtract 41 sheep

40 turkeys — 41/2 turkey

43 / 5 / 38 1 over

Put over

21 = 19+

41 = 38+

19 — 168 — 38/19/19

63

76 / 798

779 / 799

19 / 19 (1 sheep

19

11th We first by the first subtraction

that there is 19 over which is 95 & then

subtract the 19 from the 100 over leaves

leaves 81 which is 81 sheep & turkeys

& subtract 95 & from 100 & leaves 5

then we first by the second subtraction

& that there is one sheep — 19 over / 1 sheep / 20 — 100 / 20 / 80 turkeys

---

15th A Man at sharpers won the first time

the 2/3 the 2nd time he won as much as he

had in his pocket — the 3rd time he won 4

& the 1st time he won double of all he then had

at which time he found 5 left — he wants all

95 how much had he at first —

Subtract 6 / 2 / 1 / 1/2 / 1/2 — 75 / 63 / 12 — 4 / 6 3

2nd: 5 / 2 1/2 / 1 1/2 / 3 4 / 5 9 — 75 / 57 / 18 — 5 = 12 / 5 — 19 / 60 — 108 / 20 / 6 / 88 / 48 — 98 / 12 / 6 — 8 times 8

Continued Division

16th Two men A & B having found a purse of money dispute who should have it. A said he had 2/3 and 1/4 of the money made $130 and if B could tell how much was in it he should have the whole. Otherwise he should have nothing. I demand how much their was in it —

Sub first 60, 30, 20, 15 = 65

130, 65 — error

Sub 36, 1/4, 12, 9 = 39

130, 39 = 91 —

91, 65, 26

390, 195, 2340

60, 540, 5460, 2340

26 | 3120 (120

26

52

52

0

Answer $120

17th There are 2 numbers, the greatest is 3 times & 1/5 of the less, & the less is = 1/25, 1/15, & 1/5 of the greater & 1 besides. What are those numbers? Ans 75 & 24

Compound Multiplication

Examples

What will 6 yards of cloth cost @ £1-10-5

Sterling money

£ s d
1-10-5
6
£ 9-2-6 Answer

By federal money

$ 5-7
6
$ 30-42 Answer

Case 2nd

Examples

What will 42 yds of cloth cost at 15/9 per yd

£ s d
0-15-9
6
£ 4-14-6
3
£ 13-1-6 Answer

By federal money

cts
$ 2-62-5
42
5250
10500
11025/0

Answer $ 110-25 cts

What will 116 lbs of Butter cost at 3/6 per lb

£ s d
0-3-6
10
£ 1-15-0
£ 1-15-0 Answer

Case 3rd Examples

What will 563 yds of cloth cost at £1-6-9 per yd

£ s d
1-6-9 × 3
10
13-5-10 × 6
10
132-18-4
5
£ 26-11-8
7 9-15-0
3-19-9
£ 748-6-5

Answer £ 748-6-5

Compound Division

Examples

If 5 yds of cloth cost £3=13/6 what is that per yd

£	s	d
3	13	6
0	14	8

5 | 1 | Price of one yard

If 35 yds of silk cost £42=6s 7½d what is that per yd

£	s	d	q
42	6	7	2
6	0	9	2
1	4	1	3

7 | 5 | Answer

Case 2nd

Examples

If 1 cwt 3 qrs 9 lb cost £3=7=6 What is that per lb

£	s	d
3	7	6
0	8	5
0	1	2
0	0	9

8 | 7 | 2 | Answer 9d

Brimfield Feb 2d 1810

Continued

Divide £2 9s 9½d among 4 Men 6 Boys & give each man 3 times as much as one boy what will each man share and each boy

The men have thirtysix shares therefore multiply the number of men 4 by 3 and the number of boys 6 for a Divisor

4 × 3 = 12, 12 + 6 = 18 Divisor

£ s d
18) 2 9 7 (2 - 3 (1·6 = 10 = 1 = 2 = 1 boys share
14 — 3
11 7
10 4
9
20
18 2
18
2
12
2 7
18
9
9
4
36
36

£ 4 9 = 10 = 4 = 2 = 1 mans share

2
4 9 = 10 = 4 = 2
4
198 = 1 = 6 = 0 Men
11 6
99 = 0 = 9 = 0 boys

Proof 2 9 7 = 2 = 3 = 0

Divide 39 = 12 - 5 among 4 men 6 women and 9 boys give each man double to a woman each woman double to a boy

£ s d
37) 39 = 12 - 5 (1 = 1 = 5 A boys share
37 2
2
20 2
12 2
37 2 - 2 - 10 A woman's share
15
12
18 5
18 5

4 × 4 = 16, 6 ÷ 12, 16 + 12 + 9 = 37 Divisor

4 = 5 = 8 A man's share

Feb 29th 1909

135

Continued

Divide 5 guineas among 4 men so that A shall have 8d more than B and B 8d more than C &c

5
24
4/140
35

∞ d
35 - 0
8
2/34 = 4
17 - 2 C's share
8
17 = 10 D's share
8
18 = 8 C's share
8
19 = 2 B's share
8
19 = 10 A's share

to be A's share subtract

17 = 2 E's
8
16 = 6 F's share
8
15 = 10 G's share
8
15 = 2 H's share

A	19 = 10
B	19 - 2
C	18 - 6
D	17 - 10
E	17 = 2
F	16 - 6
G	15 - 10
H	15 2
	140 = 0

Proof

28/140(5 guineas
040

Dividing by 4 gets out the two middle ones shares which is D's and E's D has 8d more than E therefore subtract 8d from 35 0 gets out E's share and add 8d to get out D's

Divide 6 | 97 = 55 = 7 = 35 = 4 = 2 = 1 by 6

16 " 20 " 7 = 12 = 8 = 11 = 1 = 1

6

97 = 55 = 7 = 35 = 4 = 2 = 1

When dividing this ours we first start as 4½ miles is added to the 7 Furlongs that is when proving it must be subtracted from the furlongs and A added to the miles and the 5½ feet that is reduced to Inches must be subtracted and added to the feet as in this way 11/6 2 to carry from the Barleycorn

6 8/6 6 6/6 Dec

2 remains 5½ feet

Necessary to the next figure 6 × 8

8/6

4 8/5½ which must be added because taken from it 6 ×

154 | 35½ (3

49½

4 Remainder 4 and 3 to carry to next figure 12

Cube Root

(Extraction)

Rule take the nearest Root of the first period of the resolvend let it move it legs than just and add to the right hand of it as many ciphers as there are remaining periods in the resolvend and call it the assumed Root the multiply the given resolvend by 4 from the product subtract the cube of the assumed Root divide the remainder by 12 times the assumed root and subtract the square root of the quotient back & the square Root & subtract the assumed root will give the answer

What is the cube root of 34965783

34965783 (300
4

13986313 2
27000000

3600 / 112863132 (31350
10800

4863
3600

12631
10800

1831 3
1800 0

31 32

300 Divisor
12
3600

300
300
90000
300
27000000 the cube

of the assumed root

1/31350 (177 2/300
1

27 213
189

347 2450
2429

21

177 the required root
150 half the assumed
327 the root required

Continued

What is the cube root of 84,604519

84,604519(400
4

64 000000 | 20,604519(57190
4800 | 2 06 41 80 96
24 00 00
34 41 8
33 60 0
8 18 0
4 80 0
33 80 7
33 60 0
20 76

400 400 / 160000 / 400 / 64000000

400 / 12 / 4800 Divisor

2 57 190(239
4
43 | 171
129
469 | 4290
4221
49

239 / 200 / 4139

The square root

Answer 4139

Required the cube root of 373248

373248(70
4

149 2992 | 370(69
343000 | 840 Divisor

840 | 14 99 92(1369
8 4 0
30 99
25 20
5 79 9
5 04 0
75 92
75 60
32

70 / 70 / 4900 / 70 / 343000

2 70 / 35 half

3.19369(37
9
67 | 469
469

37 the square root
35 half the square root
72 the cube root required

Cube Root continued

What is the cube root of 44,604,519

44,604,519 | 4
33 | 41 | 40 | 76 | 1
6 4
4800 | 27 4 | 41 | 40 | 76 | 5 7 1 9 0
24 00
34 | 41 | 8
33 | 600
418 0
4800
33807
33600
207 6

400
400
160000
400
64000000

Root of the square

2 | 57190 (239
4
43 | 171
129
469 | 4290
4221
49

2 | 100
200 half of the square root

200
239 the square root
4320 the cube root

$\frac{7}{40}$ $\frac{11}{40}$ $\frac{11}{20}$

7 × 40 × 20 = 560
11 × 40 × 20 = 880
11 × 40 × 40 = 440